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NOVEMBER 2007

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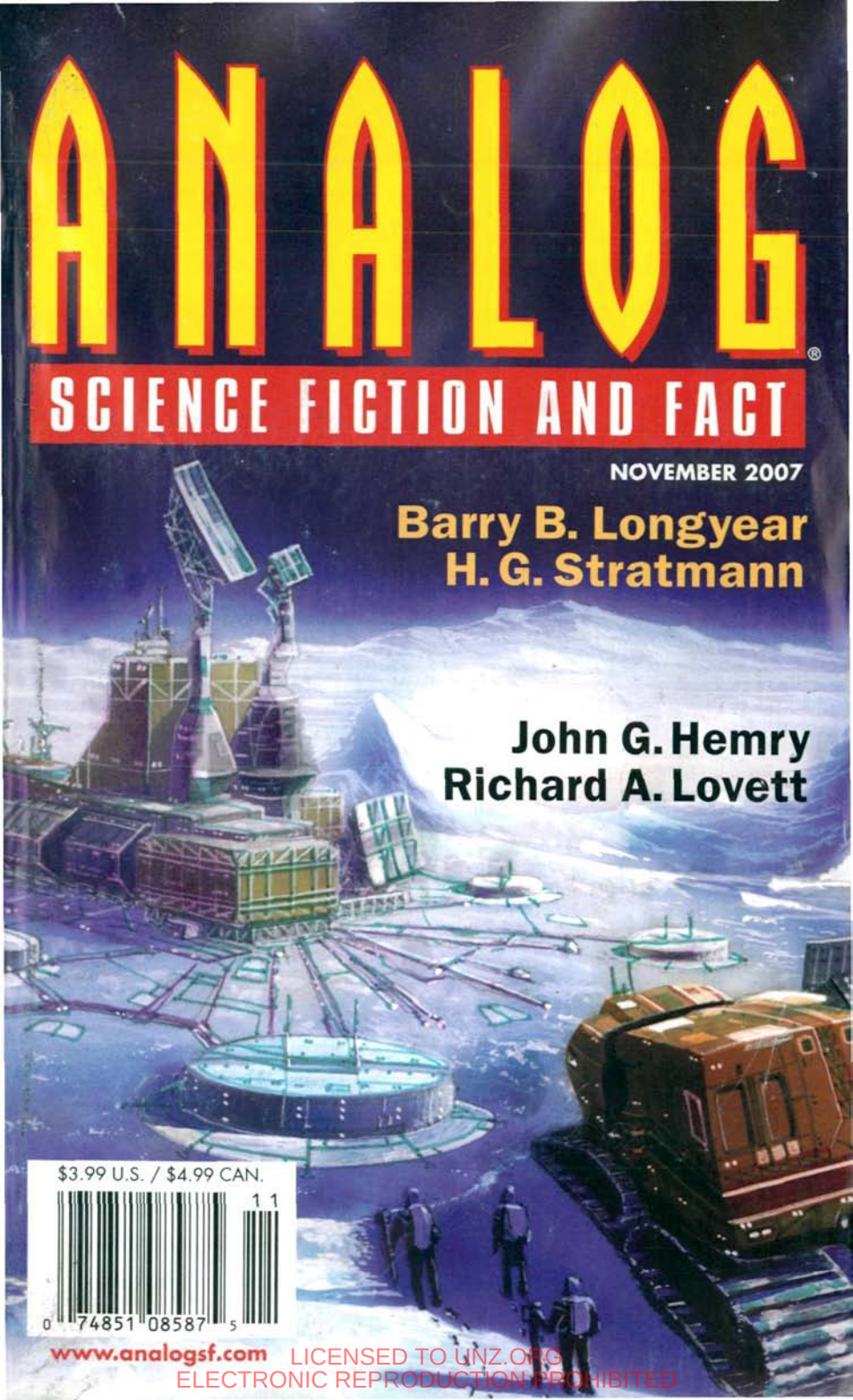

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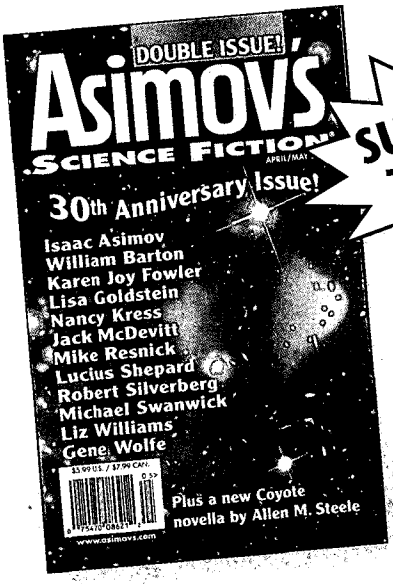

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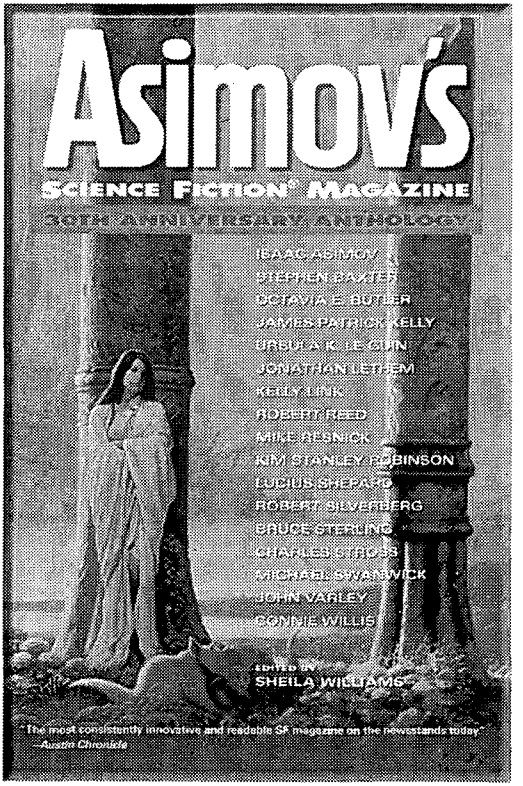

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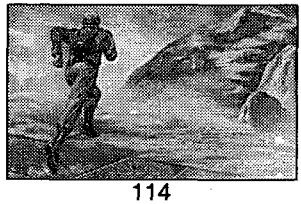

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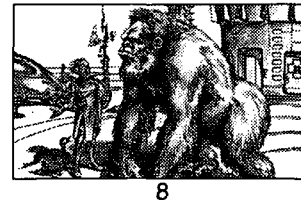

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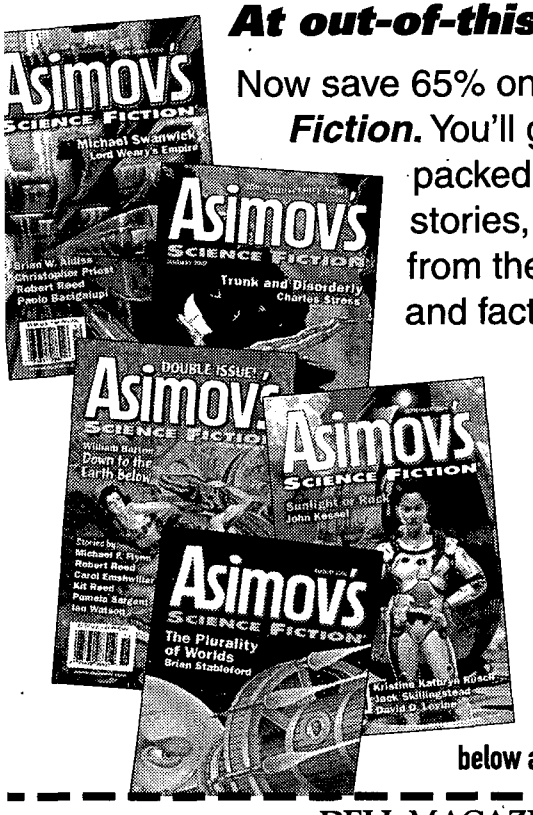

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EDITORIAL Stanley Schmidt

Double Standard Required

This past spring I attended a dinner at which a well-known science journalist spoke about global climate change, after seeing the latest report from the UN's panel on that subject. He talked about the evidence that it's happening (pretty convincing); the extent to which we can slow, stop, or reverse it (not much in our lifetimes, maybe a little better in the somewhat longer term); the extent to which we can adapt to it (a lot for rich countries, not much for poor ones); and what kind of aid rich countries owe poor ones in dealing with it (considerable, at least in his opinion, since they played the largest role in causing it and will suffer relatively little from its consequences). He was a good speaker, but didn't say much that was new to me. What I found most interesting was what he *didn't* say.

In a talk that ran approximately 25 minutes he never mentioned, except in passing, the one problem that is clearly at the root of all the others—the one that, if we continue to ignore it, will ultimately make all our efforts to chip away at the others insignificant and meaningless. When he threw the floor open to questions and comments, I listened intently to see whether anyone else would bring it up. Finally, but only after another 25 minutes, two people did. The first did so very cautiously, talking around it in terms of what he saw as changes in quality of life that he'd observed, but without ever saying The Word. The second was more direct, applauding the first for the courage it took to say even as much as he had—and then adding, "So I'll be the one to mention the elephant in the room. The problem is overpopulation."

And then, in a very short time, the subject died and conversation returned to smaller, safer topics.

It was a good demonstration of something on which I commented in passing a couple of issues back: as long as population keeps growing, nothing we do to try to offset it can be more than a stopgap—but people don't want to talk or think about that. You tell me how much change we need to make in any aspect of conservation, recycling, or increased efficiency to stop whatever dangerous trend is already underway, and I can tell you how much the population has to increase to negate the change. And I can tell you that, given current population trends, it won't take long for that to happen. We can argue about when a critically dangerous point will be reached, or whether it already has—a question that's partly a matter of fact and partly a matter of taste, since some people are comfortable with levels of crowding that others find intolerable. But there's no escaping the fact that unless people control their population growth, none of the other things we can do will ultimately matter.

Yet hardly anyone wants to face that fact head-on, much less seriously consider doing anything about it. Even our speaker, when he did glancingly refer to population, did not say anything about *over*population. He merely mentioned, as if it were simply an immutable fact

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that we must accept and work around, that Earth already has more than six billion people, and before long it will have to accommodate nine billion.

There, I think, is the crux of the problem. Most people simply assume that the ongoing population explosion is a given rather than a variable—something we *have* to accept—so they don't talk about how we might change it. But we *have* to talk about it, because the problem is central and it won't go away on its own. If it's that difficult for people to talk about, maybe we need to look at *why* it's so hard, and how we can make it easier.

At least part of the reason, I think, is the uncomfortable dichotomy between principles that sound good in the abstract and the reality of applying those principles to actual flesh-and-blood people with visible faces. It's easy to say, "Nobody should have more than two or three children," when you're writing or lecturing to a darkened room full of strangers. But what do you do when you're sitting in a living room with a family including eight or nine children—especially when they're all people you know and like? What if you *know* that the parents are the kind of people you wish more were like, and they've done a really good job as parents, so that every one of the kids is a joy to know and obviously full of potential? Can you look the parents in the eye and say, "You shouldn't have done that?" Or, even worse, look one of the later kids in the eye and say, "You shouldn't exist"?

I hope not. But neither can you say, "Everybody should do what you've done," because that would be disastrous.

I think part of the reason people feel so uncomfortable about discussing overpopulation as a problem is that they feel that if they oppose overpopulation in principle, they're implicitly condemning people already alive and saying that they shouldn't be.

I submit that they *aren't* doing that and we need a way to put their minds at ease, to reconcile accepting big families that already exist with trying not to create too many more of them. We need to make people feel that they can continue to respect the unique worth of every human being, while recognizing that sheer numbers of them can be a profoundly serious problem for everybody.

Is it really necessary? Yes; I've already said why. If population continues to increase, it will overwhelm any per capita decrease we make in any of the problematic variables associated with it, like resource use, increase in greenhouse gases, and other forms of pollution. Certainly improvements in those areas are worth making, and there are plenty of them that are relatively easy to make. There are huge amounts of obvious waste in the more technologically developed countries (especially this one): Buildings public and private are heated

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excessively in winter and cooled excessively in summer. People with no need for them drive massive, fuel-guzzling vehicles, even on trips so short they'd be better off walking. Grocery clerks put single items in plastic bags that will be used once and thrown away, when a single cloth bag could hold half a dozen items and be reused hundreds of times.

And so on. But it's not just a "first-world" problem. It's true that Westerners, and especially Americans, tend to be individually wasteful, but that's partly offset by the fact that their population growth is relatively slow. Deforestation is a major contributor to increasing greenhouse effect, and that's being driven by rapid population growth in places too poor for people to have a large direct per capita effect on energy and resource use or pollution. Family may be especially important to people in such places because they have so little else, but the inescapable fact is that the wasteful rich need to become less wasteful *and* the rapidly multiplying, wherever they may be, need to multiply less rapidly.

And don't forget that most of those third-world countries aspire to living more like their wealthier neighbors. If and when they succeed, experience suggests that a lower birth rate is likely to accompany increased prosperity. That will help (though it will in turn be offset by increased longevity), but increased prosperity will also tend to increase per capita consumption and pollution. So those places, too, will need to use less wasteful ways to raise their standard of living.

And all places will need to think about controlling population growth. It *will* be controlled, sooner or later, whether because of voluntary restraint, government-imposed limits, or catastrophic collapse because a stability limit has been passed. I suspect most people would agree that some of those options are less undesirable than others—and we still have some choice about which way it will go. To make sure it happens as painlessly as possible, people *have* to think about what their options are, what they should personally do, and how they can persuade others to make responsible choices.

To be able to think and talk freely about those things, they must cast off the idea that wanting to limit the number of new people brought into the near future implies disliking, disrespecting,

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or devaluing those who are already here. What we need is a particular kind of double standard—and we need also to cast off the idea that a double standard is always and automatically a bad thing.

The double standard we need is this: people who *could* exist at some time in the future are not equivalent to people who already exist, and should not be thought about in the same way. We can and should give full respect and value to every human being who exists (and to those who *will* exist in the future)—but there's no reason to give the same kind of consideration to those who don't exist and won't unless people choose to make them. Since they don't exist, nobody is harmed or insulted if those "potential people" are not created; but limiting their numbers can help guarantee a reasonable quality of life for those who already exist and those who *are* created (in smaller numbers) in the future.

And before anyone tries to turn this into another round in the ongoing abortion feud, let's explicitly remove that issue from the arena by leaving fetuses and embryos out of the discussion. My proposal suggests no change in the way anyone treats them—but we urgently need to recognize a fundamental difference between real people and people who have not even been conceived.

Such a double standard in no way devalues human life, but may instead be essential to its future sustainability and quality.■

We are what we repeatedly do. Excellence, therefore, is not an act but a habit.

—Aristotle

Whenever you find that you are on the side of the majority, it is time to reform.

—Mark Twain

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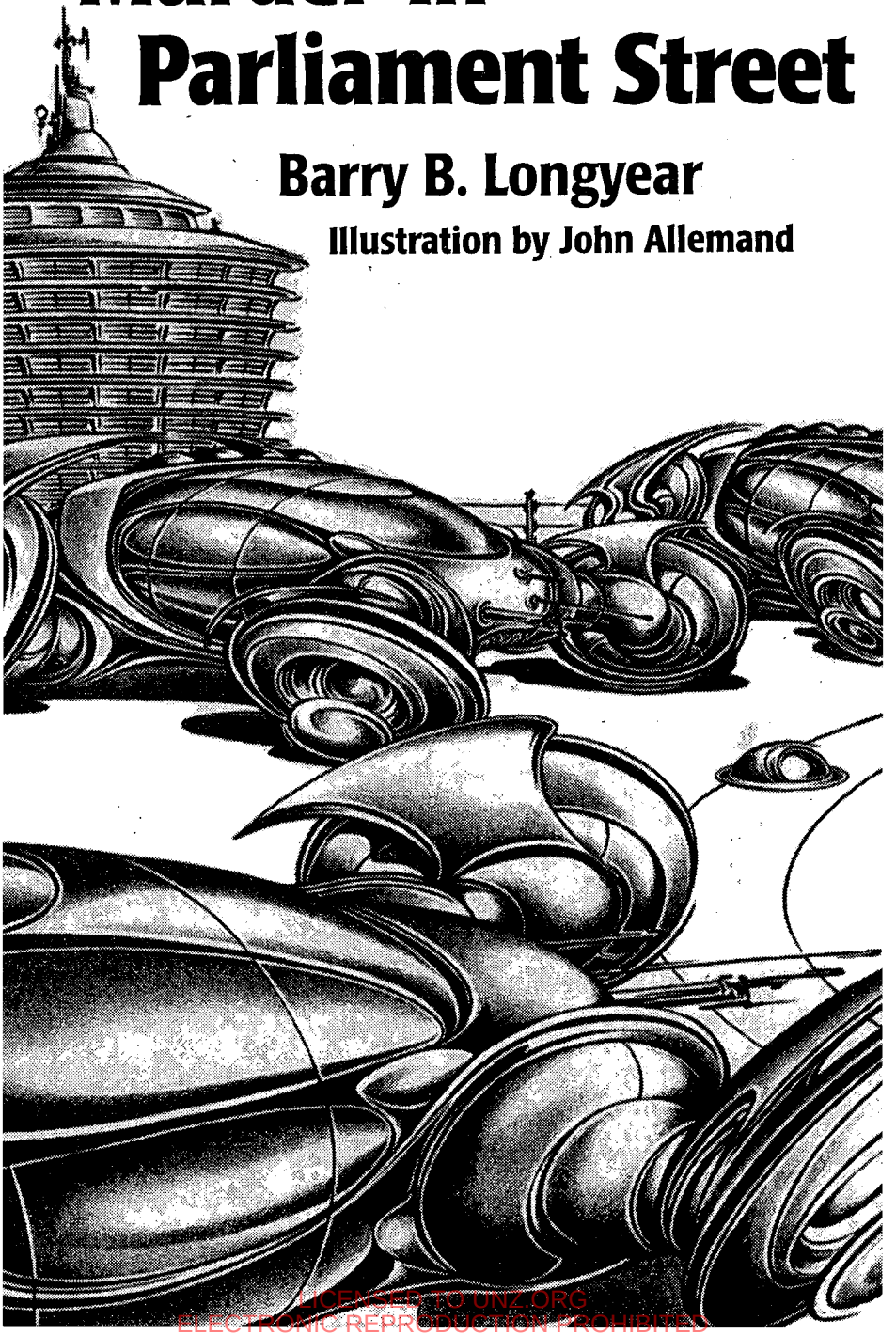
Murder in Parliament Street

Barry B. Longyear

Illustration by John Allemand



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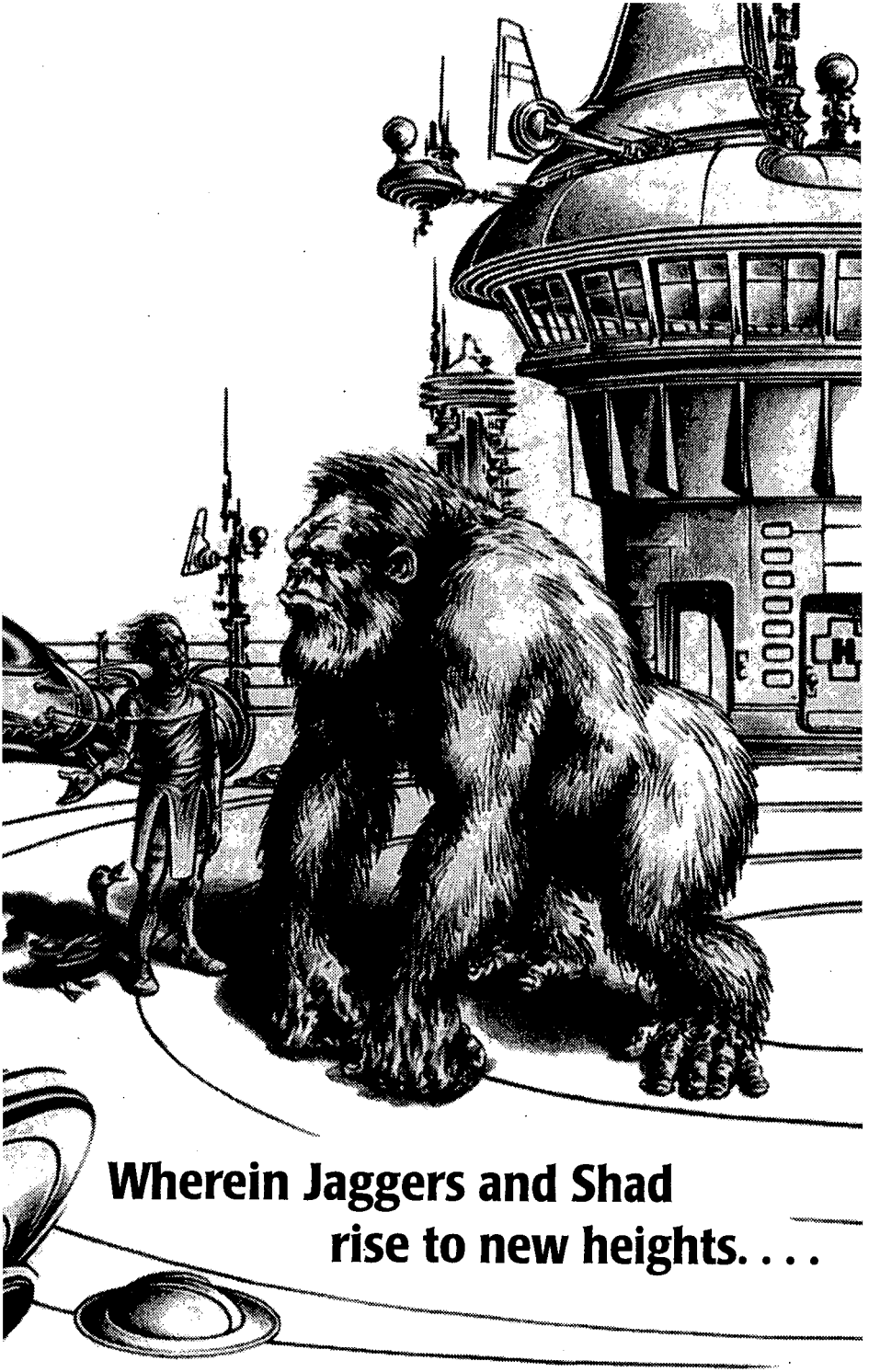

Wherein Jaggers and Shad rise to new heights. . . .

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"Cold and windy, dreary and damp," muttered Detective Superintendent Marvin Matheson. "No wonder Guy Fawkes chose November in which to kill King James and blow up bloody Parliament."

It was a day after that particular celebration, but superintendent was still celebrating apparently. No knock-knock jokes, which meant he was really down the pipe this time. Matheson was standing behind his desk, his hands clasped behind his back, head hung forward, eyes looking up through a frown and his office window at the gloom of the latest weather front. Superintendent's early-model police replacement meat suit strongly resembled a historical American gangster named John Dillinger. I for one never wished to see John Dillinger depressed. Media ridicule of that model meat suit, in combination with his wife's insistence he keep it, lost Matheson his position as Assistant Chief Constable of Greater Manchester. He was eventually deposited in Artificial Beings Crimes Division of Interpol as a lowly detective superintendent running ABCD's Devon office in Exeter. Never quite let go of that.

"You wanted to see me, superintendent?" I said brightly.

He slowly turned his face toward me. "Jaggers."

"Yes sir."

He turned and looked down at his desk. Twice he tapped on a few papers with the tip of a stylus. "It has been pointed out to me, Inspector Jaggers, you and Shad deserve a day off, principally in recognition of your work on the Hound Tor and Hangingstone Rat inquiries. That recommendation, incidentally, came directly from Middlemoor." He smiled sadly. "I heartily concur."

That took me back a step. It was uncommon at best to have any mention at all of ABCD issue from the rarified climes of the chief constable's office. Well known to us all, ever since a particular award ceremony, Raymond Crowe, chief constable of the Devon & Cornwall Constabulary, had been rather frosty on the subject of artificial beings, particularly on amdroids in law enforcement. Perhaps we were coming up in the world. "Good news, sir."

Matheson almost maintained his sad smile. "Nice spot of media buzz on both cases, Jaggers. Shad and you have the rest of the day and this evening off. Pass on the word to Detective Sergeant Shad, if you would be so kind."

"Thank you, sir, I will. Doesn't that leave the office a bit shorthanded? Towson called in sick."

"Stay on call, but Parker should be able to handle anything that comes up." He gave himself a moment of silence thinking upon Detective Constable Ralph Parker, incontinent flea-infested gorilla. His sad gaze elevated until it rested upon me. "So, Jaggers, how is Shad settling into his replacement duck suit?"

"Well enough, sir."

"A bit embarrassing him renting that Watson meat suit from Celebrity Lookalikes after his duck caught it at Hangingstone."

"That was a Nigel Bruce suit, sir, made up to look like Dr. Watson."

Matheson shook his head and looked again at the gloomy sky. "Damned silly. You looking like Basil Rathbone and Shad doing his Watson—damned silly. The chief constable put a bug in my shell-like when he heard about it, I can tell you."

"Remarkable amount of cooperation we received from the public, though, sir, as Holmes and Watson. C.C. Crowe, in addition, appears to have forgiven us with this suggestion of a day off."

Matheson looked confused for a moment then sloughed it off. "True. Mercurial man, the chief constable." He turned and faced me. "I find it hard to tell with a duck, Jaggers, but at times Shad seems a bit depressed. Still recovering from the Hangingstone thing?"

"I don't believe it's Post Traumatic Stress Disorder, sir. As you know better

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than anyone else, no one ends in ABCD by choice. Being a star on the telly must have been very exciting for him."

"He didn't find getting blown to pieces exciting?"

"I hardly think he'd list that as a job perk."

"I suppose not." He shook his head. "Those adverts Shad was in: You suppose there's anything to that insurance?" He waved a hand at me to fend off my uninformed answer to his idle question. "All rubbish now they've gone to that slimy little yob of a lizard for a mascot, isn't it? In any event, a night off will do Shad and you both some good. AB Emancipation Week, you know. I may take the missus out tonight myself." He sat down, opened a file, and said without looking up, "Try and enjoy yourself, Jaggers. Hate to waste a perfectly good gesture."

It *was* going to be a good night out. I called Val with the news and she suggested a double date with Shad and Nadine. Val was a golden Tonkinese bio and her orange tabby bio friend had been steady dating Shad. I put it to my partner and Shad decided to shake off his mood and agreed to go with us to a showing of *The Adventures of Robin Hood* at Exeter's Picture House. Part of the film's appeal to the AB culture was because a generic bio used to replace fallen police males in Britain some decades ago bore a striking resemblance to twentieth century actor Basil Rathbone. Besides Sherlock Holmes, Rathbone also played Sir Guy Gisbourne, Sheriff of Nottingham in the 1938 Robin Hood classic. What amused me about the film, aside from being a detective and wearing one of those Sheriff of Nottingham meat suits myself, was the strong resemblance of Dr. Hitchins, the current Archbishop of Canterbury, to the actor Eugene Pallette who played Friar Tuck. The archbishop was a very outspoken—dare I say rabid—opponent not only of AB rights but of AB existence, which is why Eugene Pallette always drew some good natured booing from the ABs in the audience every time he appeared on screen.

Shad and his date shared a seat. Val, of course, watched from my lap while I scratched her ears. I had disabled my wireless interface, the theater was darkening, and the new stadium seating was packed with just about every kind of artificial being in town, bio and mech, amdroid and android, as well as the occasional human natural. The flick had barely begun when Shad's head went back, shook, and faced me, his bill dropping open. I sighed glumly, knowing either it was a call from Heavitree Tower or Shad was suffering a massive stroke. Either way the evening's entertainment was concluded.

"It's Parker," Shad quacked.

"Told you to disable your wireless."

"Exeter cops have a dead bio, Jaggs. Parker says it's on Parliament Street and he can't fit. What's he mean he can't fit?"

"It means he's too big to fit in the street," I answered curtly as evil Prince John and the sheriff conversed up on the screen. "Call in the cruiser and run up the mechs." I bent over and said to Val, "I'm terribly sorry, dear, but we have a call."

"Harry," Val purred, "Nadine and I can make it home on our own. You two go and take your call."

"We'll be fine," Nadine mewed to Shad. "Take care."

I stood and put Val down on the seat as Shad hopped off their seat and followed me out into the aisle at a brisk waddle.

Outside the sky was dark, the wind coming up from the Exe dank and chilly. Tarp fields protecting the unfinished new apartment construction across Bartholomew from the theater cast the street in a powder blue glow. I turned up my collar against the chill, but only a bit to conserve the charge.

"Cruiser's on the way, Jaggs. Parker

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says he's running his command post out of Broadgate."

"Shad, do you still have that can of flea spray we picked up from the chemist's last time we worked with Parker? I can't afford to bring an infestation home with me again. Val is terribly sensitive."

"That can's gone," said the duck with a smirk, which is not easily done with a bill. "I mixed the flea spray in the can with deodorant, had the mix put in a cut glass atomizer I got at Boots, gift wrapped it, and gave it to Parker during that fireworks show yesterday."

I frowned. "Guy Fawkes Day."

"Whatever. I told Parker it was cologne. Eau Le Monk, all the rage among the simian set, and Merry Fawkesmas. He was quite moved."

"Guy Fawkes attempted to blow up Parliament, Shad. We don't usually give presents on Guy Fawkes Day."

"I imagine that depends on your opinion of Parliament. Parker is, however, using the spray."

"You are a devious duck."

"Thanks. Now, if we can only get Parker to make it to a loo before he takes a dump, there will be peace in our time." He looked up in the direction of the Pennsylvania—St. Thomas Corridor, the traffic in the air vector sparse at this time of night. "Here's our ride."

The cruiser, an issue gray and electric-green Sky Rover Metropolitan, descended in front of us, its green strobe array flashing, its doors rotating up as the wheels touched down on Bartholomew. Shad flew into the driver side and I entered the passenger side, checking the mechs in back on my way in. They were mechanical vehicles of various sizes and configurations into which we could copy our engrams while our bodies were held in stasis. The mechs were able to go places and do things the duck and I couldn't. Parker could've used a mech to work his crime scene, but he numbered copying among his many phobias and there was simply no point in arguing with him about it. Green readouts on the bed panels showed mechs operational, charged, internal laboratories stocked and ready, our engrams as of this morning copied into the Heavitree mainframe.

The doors closed and as the cruiser ascended toward the corridor, Shad said, "Do you Brits have a weird spelling for parliament?"

"Why?"

"I entered it twice, but this heap's GPS doesn't have a listing in Exeter for any Parliament Street."

I looked at the GPS readout. "You spelled it correctly. Parliament isn't on the cruiser response GPS. Put the cruiser down on High Street in front of the Guildhall."

"A secret street and Parker can't fit in it?"

"No secret, but neither Parker nor a cruiser can fit. You'll see why."

He waited a moment for a further explanation. When none came, he said, "Be mysterious."

Grumpily, Shad guided the cruiser through the Cathedral Vector Roundabout. No sooner were we through it, than the cruiser dropped from the corridor and headed toward the illuminated columned gingerbread of the medieval Exeter Guildhall immediately below us, still the oldest working municipal building in Britain. High Street, though, was choked with bright lights, news vehicles, and a crowd. The media were in force.

"Is the king visiting?" asked Shad.

"Not to my knowledge." I looked around. "Change of plan," I said seeing a place nearby where we could put down unobserved. "Behind the Guildhall, Market Square in the shopping center. Put us down just beyond that small church." I reached forward and flicked off the switch for the light array. The entire block of buildings, of which the Guildhall was only one, was a warren of little streets, shops, and walks which had been turned entirely over to foot traffic

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and enterprise. The lot of it was called the Guildhall Shopping Centre. At this time of night, the shops were closed and the walkways mostly deserted.

Shad changed course slightly and nodded toward the square and the tiny, ancient church constructed from local red stone. "Isn't that church St. Pancreas?"

"St. *Pancras*, not pancreas." I saw the duck laughing silently. "As you well know," I added, dreading my partner's delight once he found out the block opposite the High Street end of Parliament Street had another old church called St. Petrocks.

After Shad settled the cruiser down next to the small Rougemont stone church, I had us both copy into micros. The micro is a matte black cylinder-shaped air mech roughly the size of a lipstick, one end of which bristles with a variety of forensic instruments. With them I hoped Shad and I could get to the scene without drawing attention.

Once copied, our usual meat suits in stasis, we flew from the vehicle and Shad put the cruiser up in hover park. At an altitude of approximately two meters, we flew around the west end of the tiny church into a shop-lined walkway that led to the north end of Trickhay Street walk. We streaked south between the furniture stores, gadget emporiums, wireless shops, restaurants, tea shops, and AB boutiques passing only a lone bipedal dustmech with attached dustbin. He was attempting to scrape what appeared to be a flattened wad of chewing gum from the pavement.

"Bloody AB Emancipation Week, me tin arse," the dustmech muttered. "Doin' the same bloody thing and payin' bloody taxes for the privilege is all it is. Bloody wankers in bloody Parliament, tossers the lot—"

We turned right when we came to Waterbeer Street walk, leaving the unhappy mech and his soliloquy on unrequited expectation behind. After only a few meters we came to a police constable standing by himself in the dark, his hands clasped behind his back, his stocky form fairly filling the hundred centimeter-wide entrance of a long narrow walk between two buildings. Partly obscured by his shoulder on the right-hand wall of the walkway was a regulation size traffic sign that read: Parliament St.

"I can see why Parker can't work the scene," transmitted Shad out of the cop's hearing. "He'd need a shoehorn to get in there."

"It's even narrower at the High Street end," I responded. "Imagine Parker dropping a load as he tried to wriggle his way into the crime scene in front of all those cameras. That would've been a proper cock-up. Turn on your lights, Shad, go on external audio, and let's log in with the constable."

We were both hovering in the dark in front of the fellow's face. When we turned on our lights I'm afraid we startled the poor chap. He jumped, bellowed, screamed, and swung his arms about.

"Detective Inspector Harrington Jaggers and Detective Sergeant Guy Shad, Devon ABCD," I quickly introduced us.

The constable froze for an instant, let out a breath, then bent over to pick up his helmet, muttering about bloody pips, the noun modified by an additional Middle English adjective or two. Some words simply never go out of fashion.

"Police Constable Styles," he introduced himself as he stood, a rather peeved expression on his face. Styles was a big ruddy-looking chap in his late twenties, sandy-haired and attempting rather fruitlessly to raise a moustache. After brushing off his helmet, he replaced it upon his head, smoothed his yellow anorak, adopted a stiff military posture, and said, "Now then. You're the Interpollys."

"Detectives Artificial Beings Crimes Division of Interpol, Devon Office, actually," Shad said using his Laurence Olivier playing Marcus Licinius Crassus voice.

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Quite intimidating, even coming from an illuminated flying lipstick.

"No offense there, detective," said the officer stiffly. "But you two bits pop out the dark all sudden like a couple eyeballs from bleedin' Hell. Not half taken aback I was."

"Our apologies, Styles," I said. "We were trying to avoid the media tumult at the High Street end. Do we log in with you?"

"Sergeant Dunn, sir." He gestured with his head toward the walkway he was guarding. "Sergeant's at the other end. He sort of expected you to report there."

"Indeed. Are you chaps responsible for all the media attention? On High Street it looks like the resurrection and marriage of Princess Di and Elvis."

The corners of Styles's mouth turned down as he shook his head. "Don't understand it. Naught there but a dead bird."

"It was reported to us that the deceased is a bio," I said.

He shook his head and turned down the corners of his mouth. "Can't prove it by me, inspector. Looks like any other old sky rat to me." He grinned. "No shortage of pigeons in Exeter, is there," he said with an attempt at jocularity that faded rather rapidly as neither of the pips hovering before him reacted. The corners of his mouth resumed their downward turn.

"If the victim is a bio," said Shad, still as Marcus Licinius Crassus, "it probably carries a human imprint, Styles. It may be a murder victim."

The police constable shrugged his wide shoulders, his face devoid of expression. "Not paid to worry about bios," he said. "Your job, now, isn't it? No offense, detective, but the bloke couldn't of thought much of hisself getting copied into a pigeon suit. Might as well've copied into a toad or a flippin' dung beetle, right? Besides, amdroids all got bodies tucked away in stasis somewheres, don't they?"

"Some do," began Shad coolly.

"Thank you, Police Constable Styles." Outside of Styles's hearing, I transmitted to Shad, "Stop turning your crank and follow me."

"The bozo," Shad muttered as we swooped into the dark narrow passage, the walls on either side made of poured composite glass, smooth but tinted to look like brick. The only illumination came from the lights on High Street.

As we reached midway in the walk, my light picked up a small still figure on the left near the northeast wall. We descended until we were next to it. The corpse was indeed a pigeon. The bird was lying on its right side on the cracked gray paving, his head toward High Street, his dark pink toes curled up, landing gear retracted in death. The bird's feathers were disheveled particularly on the side against the pavement. There were a few spatter marks near the corpse that could have been blood. "Shad."

"Yeah?"

"Be a good fellow and notify Sergeant Dunn of our presence. Ask him to make available whoever it was who reported finding this body over at DC Parker's command post. Also, explain we're shorthanded and ask Dunn to keep his men on duty until we clear the scene."

"You got it."

As Shad streaked toward High Street, I played my lights down the length of the bird, measured its dimensions and calculated its weight. It was a common Rock Dove model, bluish-gray wings, no wing bands but white coloring along the wings' leading edges. It had a partial white ring around its neck, open in the front, and its breast was a warmer hue than the rest. The bird's head coloring was darker, but not iridescent toward the neck as you see with so many pigeons. As the general run of pigeons go, this one was neither handsome nor unique. It was almost as though this model had been chosen for its dullness—its ability to blend into a back-

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ground.

I checked my instruments and I picked up the fading marker beacon of a bio receiver. This was how one bio could always identify another as a bio, which meant the one who discovered the body was likely an amdroid or human bio. I opened the mech's neural reader and checked the pigeon's imprint and recall bank. Both neutral. Unless the occupant had been on continuous sync with a neural net or a body in stasis, the memory information was lost to wherever such energies go after life can no longer sustain them.

"We're logged in, Jaggs," transmitted Shad as he returned. "I don't get it. That Dunn seemed really irritated we didn't come in from High Street. There're two mechs out there from the Forensic Medical Examiner. Dunn says he'll send them in to haul off the vic once we're done. There was a newshound out there who says you know him."

"Fidelis?" I asked.

"That's the one. Sniffs out tips for BBC 228? I know him from Rougemont Gardens."

"I've thrown him a bone on occasion. What does Fido have to say about the news frenzy out on High Street?"

"He was told to be there and to be heavy with camera. Worthwhile story alert."

"Any idea what the story concerned?"

"I got the definite feeling everyone out there is expecting to catch someone official with his pants down."

"Really." I thought on that for a second then shrugged. "Shad, scan the vic, get a liver temp, DNA, and ID while I set up a prang and fly the grid. Analyze this spatter here, as well."

While Shad got to work, I pulled away and up until I hovered approximately ten meters away from the corpse toward the shopping center end of the walk. Because of the narrowness of Parliament Street I couldn't both get a good view and a solid fixed wall position upon which to mount the Vader prang—cop slang for the high definition image marker used for recording and analyzing the content of crime scenes. I attached one end of a high-tension poly web to one building wall about four meters up, stretched the web across the street, and attached it to the opposite wall. Mounting the prang in the center of the web, I remotely activated it. Once it settled down it began making a three-dimensional wideband record of the scene and I began a grid search of the entire space between the walls.

The walkway was unobstructed relatively clean concrete, it's condition making it more than fifty years old. Save for the images of a couple of false doors imbedded in the glass below and images of a couple of false windows and exhaust ports four stories above, the building walls were simply two solid featureless slabs of poured glass: Modern, secure, low maintenance. When I got to the High Street end I looked out at the crowd. Although the curiosity seekers had thinned somewhat, the media reporters were just as thick as before and not moving. Nothing to see at that end; no one issuing statements. The tip they had gotten must have been made of solid gold—or that's the way they were regarding it. I returned to the grid.

I noticed a small whitish feather stuck on the southwest wall approximately three meters up from the corpse. I closed on the site and hovered across from it. UV light showed a variety of organic materials—bird waste, skin cells, and a small amount of medium-velocity blood spatter—surrounding the feather in a vertically elongated impact pattern. In normal light there were a few microscopic red fibers scattered through the lower right portion of the pattern. I took images of the site, retrieved samples of the fiber evidence, took DNAs from the skin cells, feather, and blood, then measured the impact pattern to compare with the corpse's particulars to calculate impact angle, force, and trajectory.

"Jaggs," said Shad, "The spatter on the

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walk is medium-velocity blood matching the vic's. Pattern is the result of ground impact on already present surface blood. The vic's wound is on the side against the ground. Scan shows several broken bones on the bird's right side: Two in the right wing, five ribs on the right side of the breast. Wing and rib bones broke the skin. Dead about four hours."

"Around five this evening, then." I transmitted my data. "Does this match your DNA?"

A pause. "It's a match," answered Shad. "What do you have?"

"Blood, a feather, and some additional material. It appears that the deceased was propelled against the southwest wall from below—perhaps someone throwing the body up against the wall. It bounced, the trajectory arced up and the body landed next to the opposite wall. Evidence would indicate that the vic was already dead."

"Kids playing handball with a dead bird?"

"Only one wall impact. Do you have the area surveillance camera locations yet?"

"Working."

"ID?"

"No name yet, Jaggs, but Bio Registry says this is one of a super flock of eight thousand basically identical pigeons purchased from London Industrial Biotronics four years ago by a private security firm headquartered in Slough called Pureledge, Ltd."

I descended toward Shad and the corpse. "Are you telling me that bird is a private dick?"

"Rent-a-cop. Pureledge hires out to keep real pigeons off of buildings, monuments, and out of the ground transit stations. Remember the old movie, *To Catch a Thief?*"

"Certainly. Hitchcock film. Cary Grant and Grace Kelly." I fought manfully for the date, but had to relent. "Released in the 1960s, yes?"

"Fifty-five," corrected Shad. We were both old film buffs, but Shad's knowledge of films was encyclopedic, as befits a dedicated thespian.

"Set a pigeon to catch a pigeon."

"I'm going through Pureledge's site right now. Pureledge has an office here in Exeter on Castle Street. It runs three wings of three hundred and twenty birds per wing—" Shad paused for a moment. "*Ledge marshals* is what they're called."

"Shad, did you get any fiber trace off the body?"

"Red fiber. Only one thread visible, the rest microscopic. All of the fibers are centered on the same impact point that broke all these bones. You have red fiber up there?"

"All microscopic. The impact pattern on the wall shows the bulk of the fiber trace considerably off center, though. Between that and the blood spatter, when the bird hit this wall his bones had already been broken and had already been bleeding. What's your guess on the fibers?"

"It was wrapped around whatever killed this bird."

"Shad, do these ledge marshals maintain continuous sync while on duty?"

"Their site doesn't say and no one right now is answering the phone. Jaggs, did you know this was how they were keeping pigeons from nesting on building ledges?"

"I noticed a dozen years ago or so in London when they took down the pigeon netting from several of the buildings there. I never thought to question why. Pigeons still seemed the same. Fewer of them, perhaps. Buildings and walks were remarkably cleaner. Get in touch with Pureledge Exeter and have them check vitals on their stasis beds. What's on the other sides of these walls? A computer establishment on the northeast side, right?"

"Dell Bio & Mech. It's an AB tech gift shop. In the building on the opposite side is Madame Fifi's Feather, Scale, and Fur. She's an amdroid stylist."

"The vic was killed elsewhere, Shad.

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Why dump the body on Parliament?"

"Say, Jaggs, how come this—it's not wide enough to call an alley—how come this particular crack between two buildings is called a street?"

"I'll have you know, Shad, Exeter's Parliament Street holds the record as the narrowest street in the world. As it was explained to me on a tour when I first came to Exeter, it had to do with some act of Parliament in the nineteenth century. The burghers on the city council took exception to the act, but really couldn't do anything in retaliation except deliver an insult to the body that passed it. Hence they named the narrowest thoroughfare in the city Parliament Street. Rather silly, really."

"Not at all," objected Shad. "I mean, here we are centuries later and Exeter *still* has a Parliament Street. That is vendetta-grade grudge." Shad's mech nodded. "This town is really beginning to grow on me," he said as he streaked off toward High to release the scene to the FMEs. Despairing for Shad's value system, I ascended to the roof, flew grids on each, but found no cameras, latents, trace, impressions, feathers, scales, nor fur.

I had just completed my examination when I was joined by Shad's micro coming over the High Street edge. "Someone at Pureledge finally answered the phone," he announced. "ID on the imprint is a six-month Pureledge rookie named Darcy Flanagan, eighty-seven, resides in a flat at Seventeen Hoopern Street. He began his shift at three this afternoon and he and his flight leader belong to 712 Squadron. The Seven-Twelve patrols the Cathedral Church of St. Peter."

"Flight leader? Squadron?"

"That's what they call them. The fellow on the phone said the scuttlebutt in the ready room at Castle Field is that Jerry got young Darcy."

"Jerry? What is he talking about? Germans?"

"'Hop in the old crate and tally ho! Chocks away!' Jaggs, it was like talking to Fowler in *Chicken Run*."

Fowler, the aged and absurdly militaristic dotty rooster in the old Nick Park animated feature—voice done by Benjamin Whitrow—seemed to think he was in the Royal Air Force rather than a chicken yard. Every AI, and particularly every amdroid, knew the classic *Chicken Run* almost by rote. Decades ago the beheading-of-Edwina scene on the telly and bio blogs in combination with the U.S. Supreme Court's decision in Grant *v.* Hudder helped put the AI Rights Act in Britain over the top. "What did he mean, 'young Darcy'? You said the fellow was eighty-seven."

"Average age of 'the lads' is ninety-three," countered Shad.

"I see."

"Ledge marshals maintain continuous sync between bodies and bios, which would be good for us except they checked what they call their barracks. Darcy Flanagan the human natural is dead."

"Poor fellow. Did they say how?"

"Sudden massive heart attack according to the stasis bed readout. Too severe for the bed to maintain him and he was past revival by the time their medical mech reached him. Pureledge has a lot of really old pensioners as ledge marshals. They make a little cash and for a few hours a day they get to fly, serve a useful purpose, and feel young and pain free, according to the fellow on the phone, a Mr. James Duggan. Duggan says six to eight of the old coves cack out in the barrack racks every year."

"Hard done by Flanagan's demise, was he?"

"The poor guy could hardly butter his crumpet. Jaggs, the stasis bed recorded Flanagan's death at eight minutes to five this evening. The pigeon bio died eleven seconds later. Unless Flanagan managed to bust up his own pigeon suit like that, it's murder. That means media." The duck tossed his next question around in his head a bit before reluctantly asking

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it. "What do we do about Parker?"

I thought on that. "To be perfectly candid, Shad, I'm not terribly sanguine about having our end of the inquiry represented by an incontinent gorilla with self-esteem issues."

His micro swung around and looked deeply into the shadows. "Man, I can't believe I've come down to this. When I was the spokescritter for that insurance company, I used to have *staff*, bill polish, ermine feather extensions, my own dressing room. You should've seen my apartment in New York, Jaggs. I had a *fountain* in my living room! Ledge marshals. Gorilla poop."

"Those, Shad, are the challenging, exciting, ever-changing facets of a fulfilling career in ABCD law enforcement."

He dropped a heavy sigh and shook all over. "Sorry about the whining. About Parker, the division doesn't need any more bad air. Do we go to Matheson and take over the case?"

I pushed Shad's suggestion around in my mind for a moment. Neither Shad nor I were there to hurt other cops, especially those who, like us, had been flushed down into ABCD due to mishap, misunderstanding, or murder. I'd already put a smudge on Parker's record by refusing to work with him. The whole Parliament Street case was looking, however, like a giant slapstick aimed directly at ABCD Devon's collective posterior.

"Back to the cruiser, Shad. We copy into our own suits, and secure our evidence. Then we report to the command post and see where things go from there."

In the cruiser, copied into our own skins, Shad gave the cruiser instructions to come up on Broadgate by a circuitous route. By swinging out over Queen Street, heading southeast, and doubling back over St. Peters Cathedral, we might lessen our chances of attracting notice.

Shad faced me. "What if Parker cut back on the bananas? Less in, less out."

"Been tried. The fellow is addicted. He has them squirreled away everywhere. A few months before you came to the Devon office, Shad, Parker and I were assigned to represent ABCD at an award ceremony at the Royal Diana Devon & Cornwall Force Museum theater."

"Handing out attaboys to the local blue?"

"Yes, although we call the medals *gongs*. A very solemn occasion officiated by Chief Constable Crowe. In attendance were two Members of Parliament, the Earl of Devon, and Her Royal Highness Princess Mehitabel. Matheson and I took Parker's bananas away, dehydrated him, and tried to keep an eye on him. Nevertheless, he managed to tuck away a bunch or two before the ceremony."

"Naw. He didn't," said Shad.

"Oh, indeed he did, ducky. What's more, Parker didn't even notice he'd done it. Nothing quite like a fellow dropping his load before royalty right in the middle of bleeding 'God Save The King'."

"Make the news, did it?"

"Shad, Matheson's office was showered with media thank-you notes and fruit baskets.

"What'd the superintendent say when you all got back to the tower?"

"He called us into his office, pointed at his telly, and stared at Parker, his finger trembling. Matheson's face went bright red and he did a respectable impression of a beached cod. Then he waved us out of his office, came up behind us, and slammed the door."

"British reserve, wot, wot, Jaggers old sock?" he said using his Fowler voice.

"Frightening, actually. The superintendent really does bear a striking resemblance to John Dillinger. I half expected to be perforated by a Tommy gun. He ordered Parker into therapy."

"To potty train him?" asked Shad.

"That's what it amounted to." I looked down through my window. The red air-vehicle warning lights above the crenellated spires crowning the Norman towers of St. Peters glowed softly on and off

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below. "He went faithfully twice each week and Matheson received in return a lot of cleaning bills and the therapist's conclusion that gorillas—gorilla bios, in any event—cannot be trained in that regard. There are no internal warning signs noticeable to the gorilla, so the gorilla simply delivers wherever it is whenever a shipment comes in."

"Like the old joke," observed Shad.

"Yes. Wherever he wants."

Shad glanced down through his side window. "Oh boy. Hey, Jaggs? We're over Broadgate. I don't see the ABCD van." He placed the cruiser in stationary hover.

He banked the cruiser my way and I looked down. Opposite Dell and Madame Fifi's side of High Street was St. Petrocks. Between the block upon which that church stood and the block opposite the Guildhall was Broadgate: a short, wide, shop-festooned thoroughfare connecting High Street and Cathedral Yard. Parked in Broadgate were three tellynet media vans, a blogosphere pool mobile, a Devon Forensic Medical Examiner's van, and a constabulary electric, presumably Sergeant Dunn's. There were no vehicles of any kind belonging to ABCD and no ABCD personnel I recognized, not even a furtive mountain gorilla in the shadows stealthily evacuating his bowels.

"Bugger," I remarked.

Shad's comment was earthier but equally apt.

There was nothing to do but head to Heavitree Consolidated Police Administration Tower in which the constabulary's Exeter Station, Devon ABCD Interpol, and the Devon Magistrate's Court were headquartered. As the cruiser came down from the St. James–Heavitree Air Vector Corridor, Shad brought us in over St. Luke's College and Heavitree Hospital as we circled down to the sky dock on top of the tower. As we approached we could see that the media had already gathered far below at street level entrance. Up on the roof by himself someone very large, dark, hairy, and dejected was skulking next to the landing target. It was DC Parker. After coming in and docking in our assigned slot, we got out of the cruiser and walked across the target to the fellow.

As we approached Parker, Shad said to him in his Fowler voice, "I say, old hairball, the ruddy bloomin' corpus is in the middle of flippin' Parliament Street. Don't Heavitree Tower strike you as rather inconvenient for a local command post, wot, wot?"

Upon witnessing Shad's passive-aggressive performance, Parker's massive shoulders sagged even farther as his incredibly ugly head hung down, his knuckles dragging against the rooftop.

"Terribly sorry, Inspector Jaggers," he said, his voice rumbling eloquently in posh Oxford-educated tones. The urgency of his current predicament appeared to have frightened off his usual ape-of-the-people Estuary affectation. "I had the van on Broadgate, sir, but the tellies, bloggies, and shutter rats were everywhere waiting for me! Peering in the windows, underfoot, poking in their heads, all of them on geek hunts, and, good lord, the *questions*. Cameras . . . all aimed at the van. It was like they were waiting for me to . . . you know."

"Yes," I responded. "I know."

"I didn't want to let down the side again, inspector. I couldn't've fit in that narrow passage in any event. Wouldn't the tellies love seeing me try, though? That's why I asked for someone else to work the scene. I'm so grateful to you and DS Shad."

"You did the right thing, Parker," I said.

"You see why I had to get out of there, don't you?" The gorilla was motionless for a split second, then grew a bit wild-eyed. He suddenly grunted loudly, smacked his fist against the edge of the concrete landing target, cracking it. Suddenly DC Parker began turning about in a tiny circle, waving his heavily

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muscled arms above his head.

"Steady," I cautioned as I backed away, almost stumbling over Shad who had managed to get behind me.

Parker stopped, lowered his arms, and slumped. "Sorry, but will no one in this bloody city ever forget that damned awards ceremony?" He thumped his chest angrily with his fists. Seeing that he startled me again and caused Shad to take wing, he said "Sorry. Terribly sorry, sir. Sorry sergeant." He was even more crestfallen.

Shad settled further away from the gorilla. "Keep cool, Ralph. Okay?"

"Yes. Sorry."

"What seems to be the trouble, Parker?" I prompted.

He sadly shook his head, his gaze somewhere around my feet. "It all began at Royal Diane. Before that ceremony I was just another cop bio trying to make a place for himself in ABCD. After that ceremony I was a worldwide joke. There were tourists here last summer from Kazakhstan, inspector. *From Kazakhstan!* Their children had these bloody little animated stuffed gorilla toys! They sing 'God Save The King' and then poop little licorice sweeties! I simply can't bear it!"

"I never got my own action figure," muttered the duck sullenly.

Parker held out his massive hands. "Princess Mehitabel has forgiven me. I wrote her soon after . . ."

"After the goods were delivered," completed still sullen Shad.

"Her Highness's secretary wrote me a few weeks ago. He wrote—well, his letter said that Princess Mehitabel understands completely, stuff happens and not to worry myself over it. Water under the bridge." He let out his breath with what appeared to be his remaining resolve and looked up at me. "Inspector, should I tell the superintendent I can't handle the Parliament Street inquiry? If I lead this case, the media'll make a laughingstock of all of us."

Shad and I glanced at each other for a beat; the duck shut his eyes, shrugged, and nodded once at me. I faced the gorilla. "Detective Constable Parker, you have an inquiry to run and I suggest you run it. Shad and I have worked the scene and we're prepared to brief you on the evidence and the progress of the investigation. We will also back you up however we can. Leading this case will give you much needed experience. I expect you to make the most of it."

There was a touch of panic in Parker's expression. "It's not just a dead pigeon, is it, sir?"

"It's murder," said Shad. "Murder most foul," he added with a straight face.

"Shall we get on with the briefing?" I suggested.

"Yes, inspector." Parker looked up at me with sad yellowish eyes. "What ever shall I do about the media?"

"Later we'll need to prepare something. Right now we need to know how you wish us to proceed."

Parker stared at me for two seconds, then frowned, reared back until he was at his full height, puffed out his chest, and bellowed, "Very well!" He thumped his chest with both fists several times, and bellowed, "Very well, then! We'll grasp the nettle, shall we? On to Room 914!" On his knuckles and feet he scooted toward the access door, nearly ripped it off its hinges, and all thirty-five stone of him disappeared down into the stairwell, his parting cry of "Jam tomorrow!" echoing from below.

Something of stunned silence descended upon the roof. I glanced at my partner. "What happened to his accent?" asked Shad.

I shook my head. "For some reason he's returned to Received Pronunciation. I believe he only adopted Estuary to fit in, which he never did."

"I hate it when that happens."

"Oxford graduate, you know."

"I'll be a monkey's uncle."

I hoisted an eyebrow in Shad's direction. "Murder most foul?"

The mallard nodded. "*Murder Most*

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Foul, directed by George Pollock, starring Margaret Rutherford, 1964." Looking sideways at me, he said, "Foul, fowl, dead pigeon—get it? Huh? Huh?"

"Yes, yes. I quite get it," I acknowledged painfully. "Thank you."

"Any time. Give any thought to how we're going to work this case with Parker running it? I mean, he gave you the perfect out. Why didn't you take it?"

"As I recall, Shad, you nodded at me."

"That's because I'm a big marshmallow. You're a tough old ex-London Metro murder cop and our leader. We depend upon you to keep us out of silly predicaments."

I frowned deeply. "Shad, surely you see if Parker quits this case because he's frightened of the media—"

"—among other things," interrupted Shad.

"For any reason. Parker's not stupid. He's just—"

"Six cashews crazier than a Nutter Bar."

"Shad, if he doesn't lead this case and win doing it, he'll be useless in the future both to ABCD and himself. We cannot stand by and watch that happen."

"I suppose not." Shad examined my face for a moment cocking his head to one side. "There's something else, though, isn't there?"

My gaze rested momentarily on the distant ground vehicle lights circling the St. Sidwell Roundabout west of the tower. "This insane degree of media attention over what appears to be a less-than-interesting case. Add to that the timing."

Shad nodded. "You and I suddenly get the evening off, Towson's out sick, Parker's holding the fort all by his lonesome."

I nodded. "The one detective who because of his copy phobia and size couldn't possibly fit into the scene of the crime, the one detective who with each public bowel movement brings into question the seriousness of amdroids being in law enforcement at all, he's the one who catches the case."

"I checked the tower call log, Jaggs. Your newshound buddy Fido got the call to come to Parliament Street a good fifteen minutes before the Exeter cops notified ABCD."

"Record on the call?"

"Throwaway mobile. Do you think that's what the killer wants: ABCD to fall on its pratt and to look ridiculous in doing so?"

"Or someone using the occasion created by the killer. One question that remains to be answered is at whom this exercise has been aimed: Parker or ABCD."

Shad cackled out a wak-wak-wak laugh. "If it's Parker, that makes Nigel Towson our prime suspect."

Despite an involuntary smile, I shook my head. "DS Towson may be dogging it, but he's the grandfather of by-the-book cops. Former Royal Canadian Mounted Police, you know."

"Yeah." Shad shuddered. "I heard about that grizzly attack in the Yukon. Lucky his head was found by that RCMP tracking unit and they could copy his engrams into one of their bloodhound bios."

"Yes. And as soon as he finished copying, he continued tracking down the killer he'd been after. Got his man, too. A lesser cop would've gone after the bear."

"The media should hear some of these stories—how the cops in ABCD got here—rather than focusing on Parker's poop and all this silliness."

"Wouldn't that be a treat? The media have programmed this city to expect ABCD to fall on its face and have a big laugh every time we do. Our success with the Hound Tor case, though, and getting blown up out on the moor stepped on their laugh lines rather severely. They seem grimly determined to get back to the giggles. That is why we must succeed in this inquiry, Shad. We must succeed, look magnificently competent in doing so, *and* with Parker in charge."

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The duck leveled a gaze at me. "And we are going to bring this to pass how?"

I looked down my Basil Rathbone nose at him and arched an eyebrow. " I have brushed in the broad outlines of the concept, dear boy. Fill in the details." I pointed at the open door to downstairs. "Shall we brief our lead on his murder case?"

"Oh, let's do." Shad waddled toward the door muttering gloomily about computer-generated lizards, penthouses, Waterford Crystal birdbaths, action figures, and outrageous fortune.

Room 914 looked like every other interrogation room in every police station in every country in the world: featureless pale beige walls, white light panel above a plain white plastic table flanked by two sets of composite wood stools on opposite sides, audio-visual recording controls in a black enameled wall panel next to the desk. The only way 914 differed from other interrogation rooms was that it was en suite, or as Shad would have it, the room had an attached crapper. I sat on a stool at the table, Shad squatted upon the table, and Parker sat in the loo with the room's door open—undignified, perhaps, but with olfactory compensations.

Through the open door Shad briefed Parker on the scene of the crime, the position and condition of Darcy Flanagan's bio, and the impact and trace evidence. "Flanagan was killed elsewhere and dumped at the scene," said Parker.

"Shad and I concur."

"Security cameras in the area?"

I looked at Shad. He shook his head. "Nothing yet," he said to the toilet door. "I've downloaded the area traffic surveillance records for this evening into the Heavitree mainframe as well as the private security recordings. The tech mechs are just getting started on them."

The toilet flushed, but Parker failed to emerge. Nothing but silence for a long uncomfortable stretch.

"Parker?" I called at last.

"Sorry, sir. I was just thinking. What if Flanagan's body was carefully inserted into Parliament Street for a purpose?"

"What purpose?"

"A political statement."

Shad and I exchanged glances. "Dead bird in an alley—vote for Arthur Q. Schnebble?" cracked Shad.

"Hear me out, sergeant," said Parker. "The deceased is a bio, isn't he? We're right in the middle of AB Emancipation Week, right? E-Week marks the Parliamentary Reform Act of 2132, which maintains suffrage for the human engram imprint, even onto mechanical or non-human bios, and it extends suffrage to artificially created intelligences otherwise qualifying as independent intelligent beings. See?"

Shad and I exchanged additional confused glances.

"It's symbolic, sir," continued Parker. "See, if Flanagan was purposefully dumped on Parliament Street, it may well hearken back to the original reform act that led to that little passage being named after Parliament. A possibility?"

Mallards don't have eyebrows, but I swear Shad's went up. "Parker, I bet you could tell me what the original act of Parliament was that lead to the naming of Parliament Street."

"Yes, sergeant. It was the Reform Act of 1832. The act changed a number of laws in Britain, Scotland, Ireland, and Wales regarding representation in Parliament, but the main thing it did was to increase the number of males who could vote by approximately thirty percent."

"Fair to say it extended suffrage to the less worthy?" Shad inquired.

"That was certainly how the Exeter city fathers regarded it at the time. As we are all aware, that's how the archbishop and the rest of the anti-AB crowd today currently regard the Act of 2132."

I pondered that in silence for a moment. I glanced at Shad. He was looking at the tabletop. Once he had concluded shaking out his feathers from his head to

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his tail, he looked at me and said, "Well, gang, this nothing case fairly reeks with significant coincidence."

"If DC Parker is correct in his facts," I cautioned.

"He is. Checked it all out on *Ferdie's Freepaedia,*" Shad explained. "Parker—" he began but stopped short. "Autopsy report coming in," he said, his eyes focused at an invisible point between the toilet door and myself. "Flanagan's human meat suit likely died as a result of a heart attack induced by the violent death of his pigeon bio. Death in the pigeon bio was caused by a broken rib through the heart as the result of blunt force trauma, the weapon being circular, approximately seven centimeters in diameter, convex in shape, fabric enclosed, flexible—"

"Shad," I interrupted, "doesn't that sound like one of those old beanbag loads for a what-do-you-call-it?"

A brief pause as Shad consulted *Ferdie's,* then he said, "Gas gun. They were miscreant-safe weapons for use in riot control. The thirty-seven millimeter gas gun fired a 7.5 centimeter fabric-covered flexible baton filled with a 150 grams of lead shot."

"Sounds like one of those could do a dandy job of mangling a pigeon," said Parker.

Shad faced the toilet. "They're antiques, Parker. We've got greasefoot, flashnet, and stunspray now. Gas guns haven't been used anywhere for anything in over a century."

Before I could suggest Parker put in a search for gas guns in Devon, he mentioned it himself. "Research will keep me out of public view," he offered contritely as a wistful note came into his voice. "That's what I used to do, you know. Research."

Shad looked at me and held out his wings questioningly as the voice from the loo fell silent.

"Parker was once a police historian," I explained. "Oxford, wasn't it, Parker?"

"Yes," he replied gloomily. "'Bliss was it in that dawn to be alive, But to be young was very heaven!'"

I glanced at Shad.

"Wordsworth," Shad muttered back at me. Facing the door to the toilet he began to ask a question—probably concerning just how a police historian in Oxford wound up as a gorilla bio—when another call came in on Shad's interface. "Tox screen on Flanagan." He stood and faced me, nonexistent eyebrows arched. "Alcohol. In Flanagan's blood. Enough to pickle a pigeon."

We all thought on that for a moment. It was a case wrinkle with which none of us knew what to do just then. Shad's tail resumed twitching, signifying another incoming call.

"The person who reported finding the body, Parker," I said, "did he or she ever show?"

"Yes. Sharissa Thule. She's a thirty-one year old woman—human natural—from Dawlish. She was in the city shopping and visiting relatives and was on her way from the Guildhall Shopping Centre to have tea at the Milkmaid on Catherine. She found the body on Parliament and reported it to a constable."

"Why would a nat report a dead bird to the police unless she knew it was a bio?" I asked.

"She could tell it was a bio. I gather Ms. Thule carries a marker detector."

"Really. Why?"

"The way she put it, sir, 'I want to know whether to pet a cute little doggie on the head or send the bloody pervert packing.' A bit anti-amdroid. Said something about a wolfhound in Lympstone two summers ago. The creature rubbed against her leg rather passionately. Turned out to be an amdroid."

Shad's tail stopped twitching; he spread his wings and faced me, his bill hanging open. He froze that way for almost a minute, and then said, "They want me back!"

"Sorry?"

"They want me back!" He lowered his wings and began pacing rapidly in a

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circle. "That was my New York agent. Barton Stanky? The duck stockholders somehow regained control of the insurance conglomerate over the lizard people—I don't know the details, but Barton baby says the corporation stock has been diving for the bottom ever since their advertising firm dumped the duck! The clients have been demanding the return of the duck! Aa-flak!" he cried "Aa-flak! They want me back!"

"I swear, Val, I have the karma of Tantalus," I said later at home as I poked at the shepherd's pie Val had Walter prepare for me. Walter, the mech who did our cooking and housework, had even made spotted dick for dessert, but I could only pick at it.

"I finally get a partner I can work with—that I like—and bleeding Madison Avenue wants to make Shad a flipping billionaire clowning around and falling on his pratt to sell insurance."

"How nice for Guy. He was so unhappy to be let go," she said, her aqua eyes focused on mine. She sat across from me on the table, her tail wrapped around her legs. "Aren't you happy for him?"

"Oh," I let out my breath and turned my scowl toward my dinner. "Of course I am, dear. I am being quite selfish."

"A tad."

I took a breath, let it out, and tried a bit of pie. "This is rather good, isn't it?"

"Yes. Walter said he was trying a new recipe."

"Excellent." I leaned back in my chair, took a sip of tea, replaced the cup on the table, and smiled at her. "I suppose if I got a call from Metro to go back to London the sonic boom of my run back to the Yard would uproot half the trees in southern England. Thanks for being patient with me, dear."

"Cats are nothing if not patient, Harry."

"I'll miss Shad, though. He saved my life in that stable out at Hound Tor Hunts. We've talked old films for hours, and he tells the most outlandish stories. His rather disrespectful comments of certain political and police personalities from time to time have kept me in stitches, not to mention his terrible puns. Did I tell you—"

"Murder most fowl," she interrupted.

"Yes. Sorry. I forget at times." Val walked the length of the table and seated herself next to my left shoulder. "Looks as though this might be my last case with Shad," I said to her.

"If that's so, Harry, make it a good one."

"Of course. We'll make it a good one—if we can. Parker's career—ABCD's existence—may well depend upon it."

"What's on for tomorrow?"

"Parker will be tracking down antique beanbag guns while Shad and I question Flanagan's coworkers. We'll see if we can piece together Darcy Flanagan's movements prior to his demise."

"Do you know yet what to do about Ralph Parker leading the case? I'll never forget the horror of that ceremony at the Royal Diane Museum when I saw it on the telly."

"Many of us have been having rather fearsome flashbacks this evening on that account. After we briefed Parker, I prepared and read a brief statement to the reporters and took no questions. They didn't like that at all. Hardly any of the questions they tried to ask were about the murder."

"About Ralph?" she asked.

I nodded. "Sooner or later, Parker is going to have to face the media if he's going to lead this case."

"Ralph must be so worried."

"A concern shared by a small but anxious legion at ABCD, my dear."

The next morning constables from the Exeter Station brought in only a single coworker of Darcy Flanagan's, a pigeon bio named Tommy Shay. He was a deep-gray bird with gleaming white wing bands, a blued-gunmetal colored hood that came down to his shoulders,

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white beak, and deep pink feet—a much more handsome model than that flown by the deceased. Shay was a flight lieutenant and the commander of Puss-in-Boots Flight, the late Darcy Flanagan's unit. The remaining two members of Puss-in-Boots, flying officers Jock Munro and Art Krauthammer, were in hospice at Royal Devon & Exeter Hospital where Pureledge kept Munro and Krauthammer's stasis beds. Both were in their late nineties and bedridden, hence unavailable until they came on duty at three in the afternoon, should they live so long.

Flight Lieutenant Shay was brought in wearing his pigeon suit, which for him was a permanent arrangement. It seems that the year before, ninety-seven-year-old Tommy Shay cacked out on his barracks stasis bed at Castle Street while his engrams were still on patrol at St. Peters. "When that happens," Shay said from his perch on a stool at the interrogation table, "Pureledge lets their old time employees live out their lives wearing wings, if they like. Those who take to it permanent even get a new bio once the old pigeon goes toes up."

"Generous of the company," I said.

The pigeon shrugged. "Pigeon bios is cheap when you get 'em by the thousand. Builds good will with the lads, though."

"And for you?" I asked.

"A pigeon on this side o' the dirt's better'n worms on t' other, the way I looks at it," he answered philosophically.

Shad squatted on the end of the table as I leaned my elbows on it. "What can you tell us about Darcy Flanagan?" Shad asked the pigeon.

"Not much, sergeant. See, the RPAF is kind like the old French Foreign Legion. You get a job, training, equipment, burial expenses, and no questions."

"RPAF?" asked Shad.

"Royal Pigeon Air Force," answered Shay.

"Is that actually connected to the British military?"

Shay shook his head at the duck. "No, guv. Haw! The RPAF is just somethin' the original lads dreamed up to make the job a bit more fun. Long as we keep Jerry off the ledges, company don't mind."

"Tell us what you can about Darcy," I said.

"Darcy joined the 712 middle of June. He was issued one of them old-line model pigeon suits. We calls 'em 'Hurricanes.'"

"I noticed," I said, "that your bio is much better looking than Flanagan's."

"Better performin' too. This here is a Spitfire," said Shay, opening and closing his wings, turning about, giving Shad and me a good look. "We calls 'em Spits. Great improvement over the Hurricane, detective. Better speed, climb, and dive rates, higher ceiling, more maneuverable, can take a whale more punishment, too. I rammed me a couple o' pushy ravens settin' up house on a turret on the cathedral south tower in this suit back in March. Tangled toes with the buggers, I did, 'til they got discouraged and headed for the countryside. Never mussed a feather of me own." He looked at Shad. "Raven's bigger'n a pigeon," he explained.

"Do tell," Shad responded. "About Flanagan?" he urged.

"Oh. Well, Castle Field was short o' Spits when young Darcy joined 712. Still is." He faced me. "I do believe Artie Krauthammer got the last Spit."

"Darcy?" I reminded him.

"Right. So when Darcy shows at flight school, I looks at that old Hurricane bag o' feathers and says I to Squadron Leader Haverill, 'Les,' I says to him, 'you can't send the kid up in a crate like that!'"

I glanced at Shad. He appeared to be gnawing on the edge of his own wing.

"Squadron leader says Flanagan flies the Hurricane 'til the new Spits come in. 'Make do,' says he."

"Well, Tommy," I said as I faced Shay, "How did he do?"

"Oh, he took to flying well enough. Loved it so, he did. Inspector, you take

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dim eyes, sore knees, bad back, weak heart, a scarred liver, and no wind, leave that all behind and put on wings—even one o' them Hurricanes—and all you wants is to get up in the sky—" Shay interrupted himself, looked down lost in thought for a moment, then he faced me. "On patrol though, sometimes he'd lag behind. Hurricanes just can't keep up with Spits. We'd get to diving on Jerry, chasing him 'round the towers . . . well, sometimes Darcy wouldn't quite be on time. Tried to keep down the speed, but in the heat of the chase—"

"Tally ho," said Shad.

"Exactly. See, Puss-in-Boots Flight patrols the south side of St. Peters. I ain't unfair in sayin' we're hard done by with just the one flight. Wolf Flight has the north cathedral patrol which is just that side o' the church. Red Riding Hood Flight only has Mol's, St. Martins, and them other old shops on Cathedral Close. Cinderella Flight's only got east end o' Cathedral Yard, the Royal Clarence and a couple shops. On the cathedral's south side, though, Puss-in-Boots's got half the cathedral plus the Cloisters, plus the Diocesan House, and plus the Bishop's bleedin' Palace."

"And Flanagan couldn't keep up," I urged.

"What I thought I done was make a problem into a virtue, inspector. After a few days I put him on lone patrol flying the Diocesan House and the Bishop's Palace. Just surveillance, mind. While me, Jock, and Art buzzed Jerry off the rest, Darcy would patrol his part and send up the balloon if he saw Jerry heading his way. We'd come running and the four of us would roust the Hun and chase 'em off."

"So for most of the shift—ah, patrol—you wouldn't see Flanagan at all," said Shad.

The pigeon nodded. "True enough, but he'd radio in every so often when he'd see Jerry or to check in. It was just until Darcy got his Spit." The bird thought for a moment. "It worked good for a few weeks. Darcy would put in a call and the rest o' the lads'd come a-runnin'. Kept the ledges pristine, we did." Shay fell silent, shook his head. "Then Darcy stopped calling in for help. He could do it on his own. When I'd check, the ledges were clean, so I left well enough alone."

"And yesterday?" I asked.

"Patrol started at three, our flight was posted and Darcy peeled off for the palace. We got two calls from Darcy that first hour. Both times he said he'd taken care of Jerry on his own. We got no more calls. It were busy on the south side. Besides Jerrys, there was dole bums and pige freaks—other pigeon bios. They had us fagged, so it wasn't 'til a bit before five I radioed Darcy, see how he was makin' out. I got no answer and ordered the flight onto Darcy's patrol area. He wasn't there. We split up and searched all over for him, but couldn't find a feather. Can't see how he wound up on Parliament Street. That's way out of our patrol area."

"Did Flanagan drink?" asked Shad.

"Darcy's Irish so he has to put away his jar, right?" Shay said scornfully. He glanced at me, then faced Shad as he adopted a completely phony uncaring demeanor, standing slouched upon his stool. "Wouldn't know about Darcy drinkin', sergeant. Surely wouldn't. Don't socialize with the lads off duty. Wouldn't be none o' my concern anyway, would it?"

"On duty," I said. "Did he drink on duty?"

"Do I look like a stool pigeon to you?" he demanded.

Shad was back to chewing on his wing. I found a sudden need to rub my eyes. "Flanagan's autopsy," gasped Shad, "it showed that he'd been drinking quite a bit before he was killed."

"A wee touch o' the dew, eh?"

"He was pissed," I insisted.

Tommy Shay raised his right wing. "God's honest truth, detective, I never seen young Darcy take a drink on or off

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duty."

"So, the last time you saw him was at the beginning of the patrol, three PM, and the last time you heard from him was before four."

"Yes."

"What kind of transmission range you birds have?" asked Shad.

"About twenty-five kilometers before there's a noticeable drop in signal strength."

"That narrows it down," he said sarcastically.

Shay looked from Shad to me. "What's he mean?"

"Hell, man." I held out my hands. "Flanagan could've been in bloody Exmouth for those two transmissions for all you knew."

Although Tommy Shay felt bad about young Darcy, we got nothing more useful out of him. We detained him, however, until we had a chance to brief Parker.

After we delivered our report through the open toilet door in Room 914, our aromatic leader said, "There are nine gas guns registered in England. The Manchester Worker's Museum has one, the Imperial War Museum in London has one, the British Museum has two, all four inoperable according to museum curators. The police force museum in Bristol has two, one of them possibly operable. The Royal Diane Museum here in Exeter has one, functional according to the curator. Of the remaining two, Morton Geller, an antique weapons dealer in Leeds, has one. Mr. Geller believes that with the investment of just a few hundred quid the gas gun he has in inventory might be made operable, although he hasn't a clue where to obtain ammunition for it. The remaining gas gun belongs to the Office of the Bishop of Exeter."

"Whoa!" said Shad, looking at me. I faced the door to the WC.

"Parker, what about that last?"

"The lord bishop, Dr. Reginald Koch. His secretary will get back to us about the gun. Apparently they cannot locate it. No one recalls seeing it ever and the last record of its existence is a century old." Parker punctuated his finding by flushing the toilet.

Shad looked at me. "That might even be a clue."

While Parker continued his investigations and sorting through the surveillance videos, Shad and I arranged with Flight Leader Tommy Shay, 712 Squadron Leader Patricia Kwela—a.k.a. "Mother Goose"—and Pureledge Exeter Manager Lucinda Martini for Shad and me to go undercover that evening as ledge marshals, Puss in Boots Flight, 712 Squadron, Royal Pigeon Air Force.

Since we were new to the service, Shad and I had to arrive at Pureledge two hours early for flight training. Shad put the cruiser down on High Street at Castle, we climbed out, then he sent it back to Heavitree Tower. Castle Street there is a wide park-like thoroughfare given over to foot traffic, mercilessly hard stainless steel benches from another age, the occasional tree, and the obligatory busker or three. That afternoon, despite the chill, entertainment was provided by a kangaroo bio singing "Charlie Is My Darling" with a Scottish accent to the accompaniment of a banjo played by a joey bio located in the 'roo's pouch. Shad actually coded a fiver into the creditron in the open banjo case at the 'roo's feet.

"Tough business," he explained as he waddled up past Musgrave Row toward the rounded white south-facing side of the Pureledge building. Castle went up the left side of Pureledge, a narrower street named Little Castle went up the right. The pigeon chasing company's building was the southernmost of the buildings bounded by the two Castle streets and on the south by the dog-legged joining of Musgrave Row and Bailey. The building itself was a five-story Neo-Georgian structure with multi-paned double-hung windows above and larger display windows at street level the

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panes of which displayed graphics mostly of Exeter's various buildings and monuments, pristine and pigeon free. A lone "before" graphic showed a beer stone statue of some king, lord, or martyr from the west facade at St. Peters Cathedral, a furtive-looking pigeon behind the statue's right shoulder guarding a huge black nest that extended behind the statue's head and to its left shoulder. Pigeon waste coated the statue's shoulders and folded arms. At the bottom of the poster was printed, "Don't let this happen to you."

The top floor of the building was set back, the windows forming part of a metal roof. Those windows were open and a group of about forty pigeons exited one of the windows on the left and took a westerly heading. There was something strange about how they were flying. "Shad?"

"I see it. Don't know what it is." He glanced back at me. "It's like they're doing a continuous stadium wave in different directions with their wings but I can't follow it with my eyes. Weird." He waddled the semicircle to the Castle Street entrance and entered.

The receptionist was a rather attractive human nat in her early thirties named Naomi Foon, according to her illuminated plastic desking accessory. She appeared quite normal in lavender pantaloon and vest business attire, spiked black hair with lavender tips, and matching lavender communications array plugged into her right ear. In fact everything about the sales floor of Pureledge was traditional: liquid crystal walnut paneling, virtual gaslight, plush red algae carpeting, hand-painted ties on the sales agents, and the reek of preserved Albion, which is what they were selling, after all.

Receptionist Foon took our names and looked over her desk down at Shad. "I don't believe we've ever before had a ducky as one of our flyers." She batted her feather extended eyelashes and flashed Shad a smile.

"I'm already in a low paying job and I thought I'd explore some of the other options available in poverty," he said.

She nodded vacantly. "We once had a wildebeest bio."

"Why would a wildebeest want to be a pigeon?" I asked.

"He was a very old wildebeest," she explained. Her lavender streaked eyebrows went up. "Not that I'm implying either of you gentlemen are very old." She looked at me. "I would say, Mr. Jaggers, that you look very young to be one of our flyers. How old are you, if you don't mind me asking?"

"The bio was grown forty-five; I've had it twelve years. The engrams are . . ." I had to think for a moment. "The engrams are ninety-three."

"You look just like Sherlock Holmes—you know, in the old telly flicks? That actor, Basir Redbone?"

"Hadn't noticed it myself."

She looked at Shad. "I would say you are a young-looking duck."

"Ducks never show their age until they find themselves plucked, glazed, and surrounded by chopsticks," responded Shad curtly. "Where do we go?"

"Second floor," she answered. "Good hunting, fellows."

As we went to the elevator, I asked Shad, "Are you looking for a fight or has that fellow from the Chinese restaurant been lurking around Rougemont again?"

"Sorry there, Holmes. Things on my mind."

"Things theatrical?"

We entered the elevator, the doors formed and hardened, and Shad barked "Two" at the control panel. He looked up at me as the car elevated. "I guess I'm a little torn between work here and going back to doing commercials."

"Ever since that lizard bumped you out of your advert slot and you wound up in ABCD you've been unhappy, Shad. Now they want you back. I'd think you'd be quite pleased."

The car stopped and the doors soft-

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ened and faded. Shad didn't move. "I know. But I've had a ball working with you, Jaggs. I kind of like Exeter. There's Nadine, of course. Hell, Jaggs, you saved my life out at Hangingstone."

"I'll not be happy to see you go, Shad, although I will enjoy seeing you on the telly again. You're the only television star I've ever known. Val is very happy for you. So am I."

"Well, it's been a sincere privilege to work with someone who looks so much like Basir Redbone, wak, wak, w—"

Shad was staring straight ahead, his countenance frozen. I turned to look at what had captured his attention. We stepped out into the room. The second floor looked like a military officer's club from the midtwentieth century, leather-covered overstuffed chairs, dim lights, a piano mech that played itself, and dozens of posters on the walls and ceiling of fighter aircraft of World War II, with several of the Hurricane but mostly of the Spitfire: Spits diving, climbing, turning, shooting, on floats, and on wheels. The piano mech was playing "The White Cliffs of Dover" and accompanying itself with a familiar sounding female voice. I glanced at Shad and he said, "Vera Lynn," in answer to my unasked question.

"How do you know it's Vera Lynn?"

"I recognize her from the end of *Dr. Strangelove* when she sang 'We'll Meet Again.'"

"Ah, yes. With the nuclear mushroom clouds going up. Nineteen sixty-six?"

"'Sixty-four," he corrected. "Get a load of this room, Jaggs. I feel like Errol Flynn in *Dawn Patrol*." He nodded his head toward a strange-looking mech who was approaching us silently on soft rubber wheels. She was wearing a starched white dress, white cap, and a short midnight blue cape. The mech's right eye looked human. The left eye glowed green, resembling a night scope with a variety of interchangeable lenses and filters. Instead of fingers her hands bristled with sensors, various tools such as a rubber hammer, tongue depressor, and things that poked, stuck, cut, sewed, cleansed, taped, and perhaps knitted for all I could tell. The most formidable of these instruments was a sensor that resembled a huge rubber finger.

"I'm Nurse Florence," she announced in a raspy voice. As she came to a halt, her big rubber finger thrust up toward a poster of a ME 109 going down in flames.

"I'm just a little duck," Shad whimpered to the nurse in a tiny voice.

The big rubber finger retracted and was replaced by a smaller, but still fearsome, digit. "Follow me," she commanded.

"Chocks away, lad," I said to Shad. As we followed Nurse Florence to the examination rooms, the piano mech struck up the Glenn Miller version of "Little Brown Jug."

After our stasis bed physicals, about which the less said the better, we were escorted to a third floor room which housed approximately eighty triple bunk stasis beds, about half of which were filled with old men, old women, old bios, and at least one very rusty mech. "Two-sixty-four Squadron," whispered our escort, a tech mech named Watkins. "Them's the blokes you chaps'll relieve once you get in the air." In the 712 area, along with a woman in her seventies named Mathilda, Shad and I copied into our Hurricane pigeon suits. Watkins ran the three of us and eight other "chicks" directly to the roof where we met Hell's pigeon.

"You lot will never make it."

Flight Sergeant Ponsonby marched up and down our file of eleven ledge marshal trainees, his gray, black, and white Spit feathers glossed back, his pink toes gleaming with some sort of gloss, and something resembling a chopstick thrust beneath his left wing. He alternated his growling and barking with the following: "You lot come creepin' up on me roof from hospital, from the flippin'

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dole queue, from bloomin' Bide-A-Wee Nursin' Home, or hidin' out from old bill or the missus happy as you please, all fired up to singe Jerry's tail feathers for Pureledge's tenner, and not a bleedin' clue how to get in the bleedin' air. Just look at you feather bags. I might as well be talkin' to a stack of flippin' flapjacks—"

And so on. Once flight sergeant was finished with his set piece, he bellowed, "Staff!" and two pigeons emerged marching from in back of us. Through a series of shouts, bellows, shoves, and curses they herded us over to a skylight. Standing upon the edge of the raised casement looking down upon us was a one-legged, one-eyed pigeon Spit with one droopy wing. The missing undercarriage limb had been replaced by a red plastic peg leg. The missing eye was covered by a black patch held in place by a thin black elastic band.

"I am Squadron Leader Leslie Haverill, ground commander of Castle Field," he said in a calm voice. "I, Flight Sergeant Ponsonby, and the staff personnel at Castle Field welcome you to RPAF, Exeter. I know you'll do well here, become part of our rich tradition, and be credits to the Royal Pigeon Air Force."

Squadron Leader Haverill then read us *Kings Regulations* pertaining to private investigators, guards, watch officers, and ledge marshals. Curiously enough, besides chasing pigeons and other fowl off ledges, unlike detectives from the Artificial Beings Crimes Division, ledge marshals were actually allowed to detain suspects and make arrests. In cases of pigeon and other fowl bios carrying human imprints, those trespassing on private, company, corporate, or government property protected by Pureledge were subject to arrest using whatever force necessary to subdue said arrestee. Miscreants thus detained were then to be turned over to the Devon & Cornwall Constabulary, Exeter Police Station. There was, in addition, a robust course in beak-to-toe combat during which Staff Foster—a Spit pigeon wearing a tiny set of prescription goggles—mentioned that all those staffing ground and flight schools had been killed in action. That is, their suits reclining in stasis had cacked out. Like Tommy Shay, they had opted to remain in wings.

"What happened to the squadron leader's Spit?" asked Shad when we were on break.

"Terrible thing, lad," answered Sgt. Foster shaking his head, his voice lowered. "A year ago squadron leader used to command 331 of the First, covering Rougemont Castle down to High and southwest to Iron Bridge. Out on the rooftops, towers, and ledges, lads: That's where Jerry is; that's where we expect the attack." He shook his head sadly. "Danger's all around, lads, everywhere. See, back then we had a brand new pilot officer assigned to 712, lad by name of Kumar. He took to that Spit like he was born to it. Once off the tower and he was airborne. A natural flyer. Only with us a few days, though. Disappeared, he did. They only found a feather or two over by the Royal Clarence. Must've took on a falcon or hawk. Snapped him up quick as Bob's your uncle his parts parceled out 'mongst Henry and the other hawk chicks in the nest I imagine. Heart of an eagle, young Kumar, but he had the body of a pigeon and the judgment of a scone. You find a hawk or falcon squattin' in your patrol area, flyer, you call it in. Special Unit goes after the big ones."

"Haverill?" prompted Shad.

"Don't be impatient, lad." He regarded Shad down the length of his beak. "Let's see, then. Squadron Leader Haverill in his pigeon suit was cuttin' through 712's stasis beds when Kumar went down. Kumar, he slams awake all stressed from bein' turned into hawk vittles. Wildebeest bio, he was. Sprung right off that bed he did, hit the ceiling, and landed on Haverill all four hoofs a-runnin' at the same time. Tore up squadron leader proper." Foster faced

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me. "Took poor Kumar in his wildebeest suit that night and run him straight off to the wigpicker works, bleedin Happy Valley, they did. Still there, poor lad." He returned his goggled gaze to Shad. "Pieced squadron leader together but his flyin' days was done for. Took him out of the air and made him ground commander."

"Why the prescription goggles, Staff?" asked Shad, nodding toward flight's set. "Aren't all Spit bios genetically coded for good eyesight?"

"Well, lad, that were a cock-up of me own. I joined back when each squadron did it's own flight training. About eight years ago it was. They sent me straight into the 994 patrol area south o' the Guildhall. Only an hour or so in the air, lad, then we was on break. I put down on a windowsill by the Catacombs. Nice little stairclimb o' houses called Napier Terrace. I was recitin' the flap changes—" He lowered his voice as though passing on official secrets. "The changes was brand new back then. Your flight leader'll fill you in. I was number five in the flight and it were one, two, three, four, five, six—a flap on me own number, see—then two, one, four, three, six, five—up flap—then two, four, one . . . or was that two, one, five—bugger it. Been so long I forget. Anyway, I was recitin' the changes out loud when next thing I know Jerry hits me with poison gas."

"Sorry?" I said.

"Poison gas, lad—bug spray according' to the tox screen they did on me in hospital. Blinds me and knocked me colder'n January lager, as we say in the RPAF. Next I know I'm in hospital. Findin' out what happened to me upset my nat in stasis so, Billy Foster the natural man cacked out." He held out his wings. "Company's gift." He lowered his wings. "Had to get specs, though, 'cause the poison fried me corneas. Can't see much with 'em, but can't see a bleedin' thing without."

When Staff Foster marched off to abrade some trainee's ego, I turned to Shad. "We need to know if the scenes of crime officers ever found Kumar's pigeon bio, exactly where the SOCOs found those feathers, and what they did with them. We also need a detailed map of the squadron patrol areas in Exeter. I'm very curious who was living in Napier Terrace eight years ago when Staff Foster caught it."

Shad's pigeon suit looked at me for a beat then nodded. "Fitness reports and other pigeon injuries and deaths?"

"Absolutely. Get details, location, and date of each incident. We need police reports and lists of every employee, guest, and residence in each area as well as traffic and private surveillance video archives. Stasis bed consequences, too."

"You think our boy has been busy before?"

"Seems likely."

"Awright, you lot! Don't be late for parade!" bellowed Staff Foster. "To the tower, lads. Let's see if those new feathers bounce or fly!"

Part of the package in all ledge marshal bios is a flight program that does most of the work involved in knowing how to fly. On the roof the eleven of us were run up little ramps to the top of a tower and kicked off into the air until, instead of landing crumpled up at the foot of the tower, we flew down under our own power. I did it in three tries but it took Shad five.

"Ducks don't fly the same as pigeons," he explained. "I finally had to disable my duck program before I could work these pigeon wings."

We flew circuits around the building, higher and higher, almost to the level of the air vectors, then circled back down. It was the most wonderful sensation I have ever experienced. Even in one of their old Hurricanes, the strength, the freedom, the thrill, combined with the incredible degree of control, was such I was certain DI Harrington Jaggers below was grinning in his stasis bed.

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One final ground parade and caution from Squadron Leader Haverill prohibiting flight formations and synchronous wing flapping: "Lads, our function is to keep the ledges of our clients clean and to do so in a natural-appearing manner. No one objects to pigeons. They are natural; they are beautiful. What our clients object to is filth. However, if we eliminate the filth but fly fighter and bomber formations, we no longer look natural. Instead, we look threatening. Flapping wings in unison, I would add, does not look natural. Report to your commands."

Flight Sergeant Ponsonby and his two staffs barked us down to the ready room on the fifth floor where Shad, Mathilda, and I joined Puss in Boots Flight as the 712 Squadron of the Third Wing prepared to relieve 214 of the Second. We had a few minutes and Tommy Shay, Jock Munro, and Artie Krauthammer explained to the three of us what they called "the changes."

"Years ago we used to flap in unison. Took great pride in it, we did," said Shay. "The legs downstairs,"—*legs* appeared to be a term of derision—"The *legs* says they got complaints, so no more synchronous flappin'. Well, we still takes pride in our flyin', so we flies changes. Got it from the bell ringers what do change ringing. Now we up to full strength, we got six birds in the flight. We can do it proper." And then Tommy explained the mysteries of the 'Blue Line,' otherwise known as 'Plain Bob Minor.' Tommy was Puss in Boots One, Jock was Two, Artie was Three, I was Four, Shad was Five, and Mathilda was Six. After going from One to Six in order, the variations began, 214365, then 241635, 426153, and so on. "I'll call 'em out 'til you get the hang of it. You flap down on your first number, raise on your next, then down on the next. I'll time my call to start once I see where Wolf Flight is in the pattern. You'll pick it up soon enough. Any questions?"

"It doesn't look natural," said Shad.

"No, it don't," said Flight Lieutenant Shay. "But the legs don't know *why* it don't."

A buzzer buzzed and a red light began flashing. Shay led the way out of the ready room into an area ringed with open windows. There were hundreds of the Third Wing milling about. The forty or so "old wings" of the 712 introduced themselves to the five new "chicks" assigned to the squadron, stating first name then flight, as in "Percival, Wicked Stepmother," and "Jenkins, Tom Thumb." They all made Shad, Mathilda, and me feel quite welcome. On the sill of the southernmost facing window, a handsome Spit pigeon stood and called the 712 to attention. Other Spits on other windowsills addressed their squadrons. As we fell silent, a second Spit pigeon took the first one's place.

"Mother Goose," Shay whispered to us in the flight.

"I am Squadron Leader Patricia Kwela, commanding officer of 712," the pigeon said with a slight accent I couldn't place. "I am notified 712 has five spankin' new pilot officers this mission. I welcome you. Your flight leaders will give you your orders. Do your most best to follow orders. You do that, we look good, keep ledges free of Jerry, go home safe, and all be most dandy. Now we going to have moment of silence for recently departed brother Flying Officer Darcy Flanagan of Puss in Boots Flight. I ask you all call down your juju and beg your wing brother Darcy get nothin' but clear skies, soft breezes, cozy dovecotes, and the whole Peanut Mountain."

Someone cooed a whistle and the entire wing fell silent as the piano mech far below softly played "Chariots of Fire." Once that was concluded, the whistle cooed again followed by the buzzer and a green light.

"Chocks away!" bellowed the wing adjutant, the squadrons lined up at their respective windows, and one after another flights flew from the windows. I

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managed to get Shad to stop laughing long enough not to miss our flight.

As we took up our heading toward the cathedral, Shad, Mathilda, and I learned to flap changes, and to take a bit of pride in doing so. Learning "the rows," as they were called. "Plain Bob Minor" began:

123456
214365
241635
426153
462513
645231
654321
563412
536142
351624

through sixty-two variations, then was repeated from the beginning. As a "four," I could watch the fours ripple though the entire squadron while other numbers rippled in nonparallel directions. Very neat. Once the 712 was at the cathedral, Puss in Boots and Wolf flights peeled away. Wolf banked left for the north side and Puss in Boots banked right for the south where we fell in with the lads we were to relieve—Jimmy Dorsey Flight of 264 Squadron—and did a circuit of the South Cathedral, Cloisters, Diocesan House, and Bishop's Palace. Jimmy One said to Tommy the area had been fairly quiet: only thirteen pigeons and one lone pigeon bio to discourage, and when his flight peeled off to join 264, he called, "Good hunting, chaps. Jimmy One out." Then he called to "Big Band" and Jimmy Dorsey Flight ascended to join Tommy Dorsey Flight and 264 Squadron as it headed back to Castle Field.

I suggested to Tommy that Shad and I take up Flanagan's old patrol area. Since Mathilda was in a Hurricane and couldn't keep up with the Spits, she came with us. The only experienced flyer among the three of us was Shad and Tommy made him our flight leader. We chased a few pigeons off the Bishop's Palace and had a brief encounter with a pigeon bio named McGee on the Diocesan House. McGee was probably the same bio Jimmy Dorsey Flight had run off during their patrol. We chased him off but an hour later had to chase him off again. This time the three of us escorted McGee down to the Quay and showed him the cliffs above the river where the "really in" pigeons lived. Shad issued some formidable audio taken I believe from the second *King Kong* remake: giant gorilla grunts, snorts, thumps, and bellows followed by Arnold Schwarzenegger as the Terminator saying, "Don't come back," which took care of the problem nicely.

We took breaks around the Puss in Boots patrol area feeder installed by Pureledge on the roof above the cathedral tearoom. On the first break, Munro couldn't resist a tired working-for-peanuts reference. After feeding, it was off to the loo. Our patrol area's designated bombing area was in the Bishop's Garden, and it took several tries before Shad and I, on the wing, scored bulls eyes on the garden's compost heap. Then it was back to patrol.

On the second break, Artie Krauthammer shared a useful reminiscence or two about Darcy Flanagan. It seemed that, prior to Pureledge, Darcy and Artie had spent much of their lives together in pubs. That continued until they found themselves in failing health, dire legal circumstances, and turning over more than half their pensions for rat poison blends from the offies. I had to explain to Shad that offies were shops, off-license package stores that sold alcohol.

"It was a rum life," said Artie. "Darcy's the one who discovered Pureledge. See, Darcy's old liver couldn't take much more and mine was even worse. 'Another Old Coot Whiskey,' the doc says to me, 'and you'll be looking for a bunk down in the catacombs, me lad.' Darcy and me both swore off, but it weren't

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never an easy oath to keep."

"Why the RPAF?" Shad asked.

"'Pigeons,' Darcy says to me, 'young they are, livers is just fine, and no questions. How much single malt you think it takes to warm up a pigeon?' he asks me. Couple of drops? It's a body weight and metabolism thing, right?"

Shad and I exchanged glances. "Right," we both said facing him.

"Instead of more booze, we went for less body mass. Seemed like an answer to all our prayers. A single bottle could last a couple o' pigeons a month or more. The day we was to show, though, Darcy didn't. He'd spent the night and morning seein' how much scrumpy he could put down and they had him in hospital. By the time he got out, I was in my Spit flappin' changes and kind of enjoying having health and a clear head. Wanted to keep it that way. Darcy still had his plan, though. Day he left hospital he was at Castle Street fitted out for wings. All they had left then was Hurricanes. Anyway, Darcy was in the 712. I coaxed him to stay off the stuff, and he did for a few weeks. Then I could smell it on him."

"He was drinking on duty?" asked Shad.

"I never saw him. Don't know where he kept his jug," answered Artie. "I wanted to stay sober meself, see. Got into a program: Birds of a Feather. Well, Darcy and I drifted apart. Didn't exchange a word with him except to say hi for weeks. Then yesterday he goes missin' and winds up dead." Artie Krauthammer sadly shook his head. "Poor Darcy."

After the second break, Mathilda was missing. Shad and I checked the Bishop's Garden and began running a search grid on the cathedral grounds when we both looked around and noticed she was right behind us. "Sorry, boys. Had to go powder my beak," and then she cackled insanely and began sobbing and singing "Chariots of Fire." I dropped back, took a sniff, and Pilot Officer Mathilda was flying a bit too close to the wind.

"Darcy Flanagan was a good man," she declared as Shad fell back, Mathilda flying between us. "Such a dear—urp—poor dearie, dearie poo. Can't believe he's *gone!*" More sobbing. Between us, Shad and I guided her to the central peak of a roof, the palace spread out below us. From her babbling monolog, apparently Mathilda knew Darcy from his pub days. Sober old Artie Krauthammer wasn't the only one with whom Darcy had shared his reduced body mass alcohol conservation proposal. She wept, she reminisced, she sang a tune or two, gave a sloppy eulogy for the departed, and sobbed some more. Shad and I were both trying to decide how to get Mathilda to reveal the location of Flanagan's jug when she quieted, thought a moment, then took off. We watched as she glided down toward the palace, landed on the crenellated top of a small octagonal tower, then disappeared between the crenellations. When we joined her we noted a trap door set into the roof of the tower and next to it a ceramic jug painted the same dark color as the roof. Set into the base of the jug was a push-button spigot that emptied into the upturned lid of a jar. Mathilda pushed the button with her beak, a dollop of single malt landed in the lid, and she guzzled more than a wee drop or two. I looked at Shad and he was looking along the roof of the Diocesan House to where it joined the Bishop's Palace. I knew he was thinking the same as I: The bishop's gas gun was still unaccounted for.

At eleven that night, the 712 Squadron was relieved by the 132 "Big Toon" Squadron. We flew Yosemite Sam Flight around the south cathedral patrol area, then climbed to join Mother Goose and the 712 back to Castle Field, all of us cooing the old Vera Lynn song, "We'll Meet Again," as we flapped changes back home, Mathilda's changes flapping to a different ringer.

* * *

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"I am getting considerable pressure from the Chief Constable's office to resolve this dead pigeon matter," declared Detective Superintendent Matheson the next morning. Shad and I were in his office standing in front of his antique mahogany veneer desk. The rest of his office was unadorned save for the image of a gilt-framed painting of the Biograph Theater in Chicago centered in the liquid crystal wall facing the desk. The superintendent's hands were clasped behind his back and DC Parker was behind the image of the Biograph in the superintendent's WC. Between flushes and shouting through the door, Parker did an adequate summary of the progress thus far on the Darcy Flanagan case.

Complete results on pigeon bio deaths and injuries weren't yet in, but what results there were appeared discouraging. Constabulary SOCOs had been called in regarding the Kumar matter, and had collected the feathers, but apparently the evidence collected at the scene had been misplaced. The report itself had been scrubbed in the Heavitree Tower computer meltdown that year, the file apparently never having been copied to the archive backup nor forwarded to ABCD. The detectives and SOCOs who worked on the Kumar case were scattered to the winds. They were being tracked down, but with little hope of success.

I could see Matheson was struggling with reconsidering his decision to place Parker in charge of the case. At one point his eyes pleaded as his brows arched, wrinkling his forehead, probably hoping against hope I would insist on taking over. The image of John Dillinger begging Sherlock Holmes for a favor quite gave me pause. Nevertheless, as Shad would have put it, we continued with the starting line-up. Either we'd pull this lump out of the fire or we'd all be singing the Oscar Meyer wiener anthem.

After concluding the briefing, Matheson turned to his WC and said, "Parker, I rang up DS Towson to hound him about his failure to show at work. Had quite a talk with him." A long uncomfortable pause ensued. "I'm afraid Towson's put in for retirement. Sorry." The superintendent hung his head for a moment, then turned and looked out of his window at the giant mirror-finished icicle advertising the Sport Centre Ski Slope on Gladstone.

"There's something I need to say to all of you." He glanced back at Shad and me, then glanced at his toilet door. "I have no one but myself to blame for all this. I went at this job by bits and bobs, always hoping to be called back to Greater Manchester, putting this—what I considered this silliness of AB Crimes—behind me. So many issues I let slide—pay, working conditions, the entire range of our special problems." He glanced at the toilet door. "At the end of the day, I fear I've failed. I just hope I haven't ruined this office and the entire national and world ABCD offices neck and crop."

He nodded to himself. "AB Crimes is important work because murder is still murder whatever suit carries the imprint. I hope you will all carry on, but I'll understand if anyone wants to bow out." He stood there silently, the gloom in the office so heavy it ought to have posted health warnings. I felt the duck kick my ankle. I looked down at Shad, his nonexistent brows were furrowed, his beak was open, and his wings held out to his sides as he glared at me.

I faced the superintendent. "Well, sir, thank you kindly for the offer, but these are early days. Despite being terribly understaffed and underpaid, and despite the media's current cant on AB Crimes, I've rather gone off the idea of packing it in just yet."

He turned his head and looked at me. "Oh?"

"Parker is doing an admirable job conducting this investigation, sir, we have good leads, excellent detectives to follow up the leads, and it's frankly only a

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matter of time until we have a suspect. I am confident that the three of us under your leadership will be more than equal to the task. If that's all, sir?"

Matheson nodded, smiled, and nodded again. "Thank you, Jaggers." He studied me for a moment and turned back to his window. "Thank you, gentlemen."

Outside the superintendent's office, the door closed behind the three of us, Shad looked up at me. "You do know you're going to Hell."

I glanced up at Parker and the gorilla nodded sadly. "If lying gets one Hell, inspector, you're in for it. I can smell the brimstone."

"Well. Perhaps I'll be offered a position."

While Parker chased down video archives, researched injured and killed pigeon inquiries, and attempted to reconstruct the casework on the Kumar matter, he followed up on the gas guns. I helped him until late afternoon when I was to meet with Dr. Reginald Koch, Bishop of Exeter. Since the lord bishop was something of an anti-amdroid fellow, Shad's presence would likely cripple the interview's focus. Hence, Parker had Shad continue service in the RPAF to try to find out more about Flanagan's last patrol.

As I entered the ornate vine-leafed gothic entrance to the palace, I could hear a strange ghostly choir singing high above me. I backed out of the entrance, looked up, and in line high upon the crenellated edge of a decorative battlement above the entrance were the lads—all of Puss in Boots Flight, including Shad and Mathilda. They were singing Vera Lynn's "When The Lights Go On Again."

I made a rude gesture and pulled the chain. No one answered. Trying the latch, the door opened and inside the palace was a state of barely organized chaos. Carpenters, plasterers, plumbers, glaziers, decorators, architects, contractors, and bishop's minions appeared to be engaged in a shouting and dust generating competition accompanied by power tools of several kinds joined by chipberries playing at top volume several types of music and things that might be music. The choking haze of dust seemed to be settling out on acres of dropcloths while mechs carried stuff from here to there and from there to here.

There was a fellow in dusty livery and I went over to him and waited for a break in the bellowing. He was of medium height, a slender human nat of about forty with black hair, dark gray eyes, and a mouth that looked as though he had been suckled by a lemon. When he noticed me, he smiled, cocked his head to one side, and said, "Yes?"

"I'm Detective Inspector Jaggers here to see Dr. Koch," I yelled and held out my identification. "I have an appointment."

His puckered upper lip curled slightly at the sight of my ABCD card. "Artificial Beings," he said as though he had just discovered a decomposed badger in his pudding. "Come this way, inspector. Dr. Koch is expecting you."

I followed him around jack mechs, ladders, scaffolding, and stacks of building materials into a long hall, the walls draped to protect them from construction dust and debris. As I followed my guide, I watched as he brushed off his green and black coat. "Forgive me for not answering the door, inspector, and for not introducing myself. Inexcusable, but you see how things are. My name is Fedders."

"Not at all, Fedders. Making a few changes?"

"It seems endless, inspector. Parts of the palace date back to the thirteenth century and I'm afraid the subsequent centuries haven't been kind." He reached a blue glowing tarp field at the end of the hall. Reaching to his vest pocket, Fedders turned off the field, opened the almost black varnish-caked

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oaken door thus revealed, and leaned his upper body into the room beyond. "Detective Inspector Jaggers, milord."

I couldn't make out a response from within if there was one. The butler stood aside and held the door for me.

"Thank you, Fedders," I said. I entered a study that was all that I imagined a bishop's study should be: book-lined walls, green shaded lights, ornately carved wooden beams, luxuriously stuffed chocolate brown and green leather chairs, and a ceiling mural of one bewhiskered fellow I assumed to be God bestowing upon another bewhiskered fellow who resembled Burt Reynolds a pair of tablets numbered from one to ten. None of this was computer generated or liquid crystal; all quite real. In the midst of this actual and studious piety was the rear-on view of a remarkably overweight fellow in green plaid shorts, purple satin short-sleeved shirt, red and green argyle socks, and spiked red and yellow golf shoes. As he teetered upon his artery-lined legs, he was apparently attempting to knock golf balls with a putter across his solid green carpet into a container that resembled a highball glass.

"A moment, inspector," said the man. His head came up and he was wearing a strange garment upon it that appeared to be a white leather tam with a purple visor and a large purple pom-pom on top. "I finished up an appearance at that three day golf thing at Oak Meadow in Starcross this morning. Abominable weather."

He swung, he hit the ball, the ball rolled straight and true across the carpet just where physics sent it: wide of the glass and directly beneath a green leather chair studded with polished brass tacks. The Lord Bishop of Exeter raised a trembling hand gripping his putter above his head, made several gasping and choking noises that to my ear approximated certain Middle English nouns, verbs, and adjectives fighting for expression, then the hand came down. He put the putter handle-first into a large purple bag leaning against a built-in bookcase where the gleaming instrument joined his other implements of improbable relaxation.

"Not as young as I used to be," said the bishop.

"It's going around, milord."

He wiped his fleshy red face with a purple towel. Lowering the towel, he regarded me for a moment, then tossed the towel in the general direction of his golf bag and seated himself in a brown leather chair next to a table that had a drink of some sort requiring a tiny pink umbrella up top and a polished silver tray beneath. He nodded toward another chair and I seated myself in it. He lifted his glass and asked, "Care for something to drink, inspector?"

"No. Thank you."

"Well, you are, aren't you?"

"Sorry, milord?"

"Young as you used to be. At least at some point. Artificial Beings Crimes Division, wot? Everyone in ABCD is a bio or mech, am I right? Never heard of anyone copying into anything older than his natural."

"ABCD is staffed by ABs—artificials. When I used the word *I,* milord, the reference was to my imprint rather than my suit."

"Suit? *Suit?"* His thick white eyebrows arched. "A suit is a jacket, man. Trousers, a waistcoat perhaps. God's truth, man, what you call a suit is a created *body*—what God in his arrogance once thought was *his* domain." The bishop's eyebrows came together into a frown.

Little profit in bandying souls, minds, mortal remains, and afterlifes with someone who was an obvious bigot. He was also a bishop and presumably could quote me under the table regarding my bandying candidates. Putting temptation aside, I said, "I'm inquiring about an antique gas gun registered to your office well over a century ago. We've talked with your secretary and he seems un-

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able to locate it."

"Gas gun? Gas gun? What rot. I own guns. Fowling pieces, wot? Never owned a . . . gas gun, you say?"

"Yes sir."

"What's it for?"

"They were originally used by law enforcement in non-lethal riot control. You might say the one we're looking for now, though, was used as a fowling piece."

"Fowling piece, you say?" His eyebrows went up again as he pointed a finger at me. "Ah hah! You're talking about that dead pigeon bio on the telly. Ledge marshal chap."

"Yes, milord. He was killed by a gas gun shooting a flexible baton."

"Flex—a what?"

"A beanbag."

"Beanbag. Damned silliness if you ask me. Pigeons. Beanbags. If that chap'd stayed in his own skin, he'd still be alive, wot?" The bishop took another drink, placed the glass upon the tray, and faced me. "Jaggers, have you any idea how much it costs churches in this country to keep pigeon filth off sills and ledges? Have any idea at all how it's done?"

"Actually—"

"Cloned pigeon bios, can you believe? All over the sky: Bloody scientific freaks strutting about chasing off real pigeons. Call themselves the bloody Royal Air Force! Ruddy cheek of it. Takes a king's ransom just to keep filth off buildings. Billions we pay across the entire kingdom. You want to see your money grow, sir, sink a few thousand into that Pureledge."

"About—"

"You ever see 'em fly, sir? The pigeon Air Force? See what they do with their wings when they're up in the sky? I pulled a bell rope or two in my time, sir. I know what they're up to."

"About the gas gun, milord."

"Gas gun? Oh." He settled back in his chair, pursed his lips, and raised an eyebrow at me. "Murder weapon, you say?"

"Yes."

"Understand, inspector, my personal possessions are different than things belonging to the bishop's see. I don't own this furniture," he raised a hand, "or any of these books. They all belong to the office." He frowned again, looked at his knees, and looked again at me. "How old was this contraption?"

"It was manufactured in the twenty-first century. Your secretary said the last mention in your records is one hundred and forty years old."

"Rubbish. Don't own any guns that old. Wouldn't use them if I did. Unreliable. Something that old belongs in a museum, wot?" He placed his hands upon his knees, leaned forward, and stood. Turning, he went to the writing desk and pushed a button disguised in its surface. His face and hair achieved a bluish-white hue and I realized he was looking at the illuminated side of a virtual video screen. "There's that mention." He studied the screen, his lips silently moving, then moved his fingers about on the desk's surface. "Let's see. There, inspector. Well. What do you make of that? The office owned a Defense Technology 37mm Multi-launcher with folding stock and revolver type motor driven magazine. Here's an image . . ." His eyebrows went up. "Formidable looking device. Fired beanbags, you say."

"Yes, milord."

"Six rounds in three seconds it says. Bloody hell. You could have a Glorious Twelfth shooting party with one of those things—open the shooting season proper." He nodded once. "Let's see. Cathedral groundskeeper then purchased the weapon for pigeon control. Gun was never used." He glanced at me. "Illegal to shoot pigeons then, I suppose."

"As it is now, milord."

"Silly regulation." He looked back at his screen, muttered some numbers, and fingered his desktop. "Ah. There. I was right. A weapon of that make, model, description, and serial number is among the acquisitions of the Royal Di-

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ane Devon & Cornwall Force Museum. You know it? Fore Street next to St. Mary Arches?"

"I know it." I got up to look at his screen and verify the bishop's statements. Indeed, the weapon in question resided at the Royal Diane Police Museum. I asked Dr. Koch if I could use his link.

"Feel free, inspector." He nodded and returned to his chair and beverage.

Clerical error. The serial number of the gun belonging to the bishop's office had been entered incorrectly when the gun was donated to the law enforcement museum back when its location had been at Middlemoor at the Police College. Because of Parker's inquiries, the curator at the museum had rechecked the serial number and had made the necessary correction on their site. While I was there, I checked on the bishop's alibi. At the time when Darcy Flanagan was killed, the Bishop of Exeter was indeed in Starcross being entertained by approximately eighty witnesses at the venerable Oak Meadow Golf Club. The soiree had taken place after a blustery day of attempting unsuccessfully to put little white balls into little round holes for the benefit of notorious anti-AB life organization, Natural Pride. The person writing the article was Alicia Pelletier of Starcross, secretary of the local NP chapter.

"Lord Koch, are you a member of Natural Pride?"

"Natural Pride? Heavens, no," he said from his chair. "Don't get me wrong, sir. It's a sound organization doing vital work." He turned in his chair and looked at me. "A view unlikely to be shared by artificial beings I suppose." He turned back, removed the peculiar hat, and placed it on the table next to his drink. "Too controversial, NP. Never do to join in my position. Eight percent of church members in the see are ABs. I have a responsibility." He shook his head. "Human imprints on animals, sir. God never intended kangaroos to play the banjo, sir, nor apes to sing before the royal family."

The Parker reference peaked my interest. The bishop shook his head ruefully, noted his glass was empty, and was about to ring for his butler when the door opened and Fedders appeared with a fresh highball. "Bloody gorillas," he muttered raising the fresh drink to his lips. He glanced back at me. "Conducting your current inquiry I understand."

"Yes, milord."

He turned back, muttering to himself. "How long until the future sees a bloody chipmunk as priest?"

I decided to risk a question. "Milord, how would you feel about killing an amdroid?"

"Hah! Me, sir? Kill one, sir? I'm a man of God, sir. How do you think I'd feel about murder?"

"You consider it murder?"

He looked around again. "My objection to amdroids, inspector, is that in copying into an animal suit, as you put it, I believe the soul is copied in as well. Moving the soul in and out of a body is man's ability, sir, but it is *God's* work. If the only imprint of an individual is in an amdroid, bio, or mech, killing that imprint moves that soul out of the body. Again, sir, I say that is God's work. When men move souls I call it murder. Dread the future, sir. I do." He shook his head and looked down at the tiny pink umbrella in his fresh drink. "I do," he repeated.

That night at home eating dinner—Walter had prepared an excellent pasty—I mentioned to Val my visit with the bishop. "Dr. Koch seemed quite adamant that every time we save an imprint off a dying soul or copy into a mech we're somehow violating God's plan. I'm glad I never had to bother with all of that nonsense."

"You mean religion?"

"Yes. My father thought I should choose for myself. I looked around, ex-

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perimented some, but in the end decided to leave it all be."

Val lowered the paw she had been licking as she sat on the table and beheld me with those dazzling aqua eyes. "Yet last Christmas Eve," she said, "we went to Saint Peters to listen to Christmas carols."

I thought on that, remembering the young male soloist who had brought me to tears with his haunting interpretation of "I Wonder As I Wander." Val had been on my lap.

"There wasn't a thought in my head that night," I said to her. "I was filled with beautiful sounds. Tremendous choir there."

"I remember," she purred as she walked over and sat by my shoulder, leaning against it.

"When that boy sang—you remember the one—when he sang that carol I didn't even hear or understand the words. For a moment I flashed on that terrible night those yobs came at me in London as I crossed Trafalgar Square. The knives, all that blood."

I glanced at Val and her eyes were closed. "When they found me and harvested my engrams I was all the way to Charing Cross Station. I don't remember getting there, but I do remember praying. It wasn't to some bearded gent in a long white nightshirt or even using a name. I asked whatever was out there to get me home to you. When I heard that boy sing, his beautiful voice reverberating from the walls of that ancient cathedral, I was filled with gratitude to still be alive, whatever suit I inhabited. How could that be wrong?"

"Harry," she said, "it doesn't appear to have bothered the entity to whom you prayed." She rubbed her head against my sleeve. "Nor the one to whom I prayed."

We sat like that for the twenty seconds it took for the telephone to ring. I got up, walked into the living room, and said "answer" to the tiny screen on the end table next to the couch. Val liked the screen phone because it was easy for her to ring up and talk with her friends. I didn't like it because any nit with wit enough to punch in our number got a free peek at me. That's why I usually used the old fashioned one in the kitchen. The screen came up and it was Shad. "Hello, old duck."

"Hey, Jaggs. Parker and I have been at the tower all this time trying to crack Lord Bishop Fauntleroy's alibi."

"Find a fissure?"

"Polished titanium. He was definitely at the golf club when Darcy Flanagan was murdered. Something else, though. Do you remember that site write-up on the banquet by one Alicia Pelletier?"

"I remember."

"Parker read the whole thing including the mention of those valued Devon Natural Pride members who, most regrettably, could not attend that day's festivities at Oak Meadow. Ready for two of those names?"

"Stun me, ducky."

"Sharissa Thule of Dawlish and Raymond Crowe of Exeter."

I stood there, stunned. Half of that duo shouldn't have been a surprise. Two out of three times, the person who finds the body is complicit in the killing. It was the second name, though, that was going to be a problem: Raymond Crowe, Chief Constable of Devon & Cornwall Constabulary. His name answered so many questions it almost outweighed the overwhelming problems.

"Jaggs? I thought that making Crowe our prime suspect would at least be worth a bugger or two. You should've heard what Matheson said." He held a wingtip in front of his bill. *"I quite blushed."*

"Send me a cruiser, Shad. I'll be right down."

"He said that, too. Oh, a minor hitch in the murder weapon. The FME is amending his report. It seems that the cause of death wasn't the beanbag."

"Oh?"

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"That caused the broken bones and precipitated his nat in stasis to peg it, but doesn't explain how that one rib changed direction eighty degrees from the direction of impact and made it into Flanagan's heart."

"Shad, is it possible that Flanagan was conscious? That he knew his body in stasis was dead?"

"He was on continuous sync with his nat. It's possible."

I rang off and went to the hall to get my coat and hat. "Val," I called. "I have to go out. There's been a possible break in the Flanagan case."

"What is it?" she asked as she came up to me. I reached for the knob.

"I haven't sorted it all out in my mind yet, but our killer might very well be Chief Constable Crowe himself."

"Oh, dear."

I nodded. "Yes. Oh dear, indeed."

The cruiser was waiting for me as I left the house. I climbed in, and the vehicle ascended into a clear night sky and turned east, sirens blaring, right-of-way signals interrupting nearby vehicles' GPS controls, my own set of Christmas lights flashing green as the cruiser cut across Pennsylvania–St. Thomas to St. James–Heavitree Corridor. As the cruiser streaked toward the tower the pieces began falling into place: Parliament Street, the evening off for Shad and me, Parker catching the call, the pressure of the chief constable's office to resolve the case, the media there and waiting for Parker to drop it, the missing case file on the Romila Kumar bio disappearance. It wasn't enough to bring charges, though. Finding the rest of our case was going to be the night's likely assignment.

Eight the next morning in the superintendent's office, dark circles and baggy eyes all around, including Detective Constable Fatima al-Fasi and Police Constable Duke Milburn both of Exeter CID. They had been the two on call for ABCD requests and had brought in Sharissa Thule just before midnight. Detective Superintendent Matheson asked them to remain pending an additional arrest. Now the sun was up and hurtfully bright.

"I don't quite understand why we still need to be here, superintendent," DC al-Fasi said to Matheson. She was wearing an olive pantsuit with black turtleneck. The first impression she gave was of being young and petit—too much of both for police work. She had bobbed black hair, soft dark eyes, and no obvious makeup. It took awhile to notice the scars and calluses on her hands. She was one of those who worked out by smashing bricks and oak boards. "You have our full cooperation in making arrests," she said. "Simply tell us who you want nicked, hand us the warrant, and we'll bring him in." Milburn nodded, yawned, and nodded again. Middle twenties, brown eyes, buzzed brown hair, square-jawed, and muscular. He was in the usual Exeter blue except instead of a helmet, his headgear consisted of a blue watch cap.

Matheson was seated behind his desk. He looked up at his liquid crystal ceiling. Images of little white clouds moved soundlessly across a deep blue sky. Shad and I were in chairs before the superintendent's desk, al-Fasi and Milburn seated to our left. Parker occupied his usual seat in the WC. Matheson brought his gaze down until he was looking at DC al-Fasi. "It has taken us a while to collect enough evidence to obtain an arrest warrant, detective." Milburn was steadily sliding down in his chair, his legs crossed at the ankles, the back of his head in search of rest.

"I apologize, sir," said DC al-Fasi reaching out a hand to awaken her constable.

"Never mind, detective. He'll awaken soon enough." He looked at her. "We have one last task before sending you all out to make this arrest. It will be necessary for you understand the case we've prepared against this individual."

"Why, sir?"

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"Unless you understand the evidence, you may be reluctant to carry out the arrest."

She looked a bit impatient. "Reluctant or not, superintendent, we'll do our job," she replied off-handedly as she reached out and jabbed Milburn, barely getting his eyelids to crack open. "Who is the bloke?" she asked in the midst of a barely stifled yawn of her own.

"Chief Constable Crowe."

Milburn almost slid out of his chair. Like a jack-in-the-box he jumped back to an upright seated position. "Blimey," he said. He looked at DC al-Fasi who was looking back with very wide eyes, upraised dark brows, and an open mouth.

She faced Matheson, her eyes still wide, all thoughts of sleep banished. "We'd best see that evidence, then."

Matheson pointed at the wall he was facing. "If you'll turn your chairs about." Except for Shad, we turned our chairs around. Shad simply jumped up on the back of his chair and faced the image of the Biograph Theater. The superintendent said to the toilet door, "Very well, Parker."

The image of the Biograph faded and was replaced by Alicia Pelletier's article on the Oak Meadow Golf Club banquet.

"Chief Constable Crowe was scheduled to be at the special golf tourney in Starcross on the day Flanagan died," said Parker. "Instead he was registered under a false name at the Royal Clarence Hotel. Did you know the Clarence was England's first hotel?"

"The witnesses, Parker," Matheson urged.

The image switched to a security video of two fellows behind a counter facing a bewhiskered fellow in civilian clothes, a large suitcase at his feet.

"Desk clerk and office manager at the Clarence, sir. Chief Crowe and Ms. Thule have been meeting there once or twice a week since last July. The hotel staff pretend they don't recognize him behind that phony beard, but they all know who it is."

"The customer's always right," said Shad.

"Go on, Parker," I urged.

"Yes. Well, they check in, go up to their room, have a wee drop, get naked, put on some erotica, and then—"

"Yes," Matheson said with a pained expression on his face. "As tantalizing as this is—thank you for that mental image, Parker—that is not illegal." He waved a hand toward the image. "Besides, where's the mistress in this shot?"

"On the day Flanagan died, Chief Crowe checked into the Clarence alone. The hotel clerk says the chief appeared to have been drinking rather heavily."

I glanced at DC al-Fasi. We had her attention as well as her constable's. A new image appeared on the wall, that of the Clarence's north side. "This is from surveillance taken from Saint Martin's across from Dingles Berry Farm store on Catherine," continued Parker. "This was an in-house camera not visible from the street or the hotel. This window is Chief Crowe's room that day." The image centered on a third floor window of the hotel and zoomed in. Despite the blustery cold winds that day, the window to that room was open at the bottom. The curtains weren't completely drawn; a shadowy figure was noticeable between them. Then came Pilot Officer Darcy Flanagan swooping in and thumping into the side of the casement, somehow landing upright on the ledge followed by some severe staggering. Flanagan appeared to be laughing uproariously.

"That bird's pissed," declared Milburn.

"Is there audio on this?" asked al-Fasi.

The sound increased along with a great deal of wind and background noise. When Parker suppressed the background, we could hear Flanagan laughing. He was looking in the window, pointing with his wing. *"Wot's this then!"* we heard him holler, another raucous laugh, then there was a *poomf* sound, and the pigeon was gone. The window quickly closed.

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"The surveillance video doesn't cover Martins Lane below where Flanagan landed," said Parker. "The camera that covered Martins Lane had been tampered with." He ran the Dingles Berry Farm video again from when Flanagan pointed with his wing and laughed at the person on the other side of the window. In slow motion we saw a small puff of escaped gas, and Flanagan falling straight back from the window for only a couple of frames, a smeared red object against his right side.

"Sharissa Thule was below the window to collect the corpse and the flexible baton load," said Parker. "We have no video, but we do have Sharissa Thule."

The image changed suddenly to the interior of Room 914. On one side of the table were Matheson and I. Shad squatted on the table's end. Seated on the other side was Sharissa Thule.

"Ray was obsessed with bird bios," said Sharissa. *"He was convinced the birds were seeking him out, ridiculing him, trying to do him harm. 'They're out to get me, Shariss,' he'd tell me. This one pigeon bio somehow found out about the trysts Ray and I were having at the Clarence. No matter what room we were in, that bird would be outside the window, marching around, laughing, and calling in to us. It was embarrassing."*

"Go on," prompted my image.

"Ray tried to grab that bird a number of times, but he was just too fast. Smelled of whisky, too. Horrible thing. I said to Ray, why don't we stay someplace else? That'd make sense, wouldn't it? But, no. No bloody amdroid was going to make Ray Crowe give up everything to the damned bios. Ray was once on the Honors List, you know. Then that awards ceremony happened—that gorilla thing?"

"Yes," said Matheson. *"DI Jaggers and I were there. And . . . uh . . . DC Parker."*

She frowned at me, then Shad, then cocked her head toward the loo. Shad and I nodded and she shrugged. *"Well, anyway, you know just what I mean. Getting embarrassed like that knocked Ray off center."* She pointed at her right temple. *"In the head Ray went a bit dotty. Then, after what that bird said . . ."*

"What was that?" Shad's image prodded.

"That bloody rude pigeon said he heard all about us down in the pubs. Ray and me! The whole hotel staff was talking all over the bleeding city!" Sharissa Thule was looking a bit dotty herself. *"All those pigeons, hotel staff, pub crawlers, who knew who else was talking? Bloody damned amdroids! I teach third form! What about my reputation?"* She looked down and her hands were wringing the life out of a pink tissue. She took a deep breath and released it in a ragged sob. *"He wasn't dead, you know."*

"Who wasn't dead?" Shad's image asked.

"Flanagan. The pigeon bio. When I picked the bird up to put him in the tote he says, "What's all this then?" and he laughed. Sort of choking, but he laughed. I wanted to rush him to hospital, call the medimechs—something. But Ray, he was right beside me in a minute. I held the bag out to him and said, 'He's still alive.' Ray looks in the tote and the bird looks Ray right in the eye and says, 'Darcy Flanagan is dead.' Just like that. Darcy Flanagan is dead."

She took another tissue, blew her nose, and slumped forward on her elbows. *"Ray, he looks around, makes sure no one's about, reaches into the tote, wraps his big hands around the bird, and squeezes. Not long. Only a little squeeze and the bird was gone."*

The image froze and Parker said, "We talked to the FME and that little squeeze addresses the FME's concern about that rib bone's change in direction; the one that went through Flanagan's heart."

"When Chief Constable Crowe was detective chief superintendent," said Shad, "he and his former spouse Lurella

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lived in a modest place on Napier Terrace near the catacombs. That was where Pilot Officer Trainee William Foster of Pureledge, Ltd. was hit with insecticide. He still carries the scars of that assault and his natural body expired in stasis as a result of the attack."

"We have the sworn affidavit of Lurella Roberts, eyewitness to the assault against Foster. Years later," continued Parker, "when another pilot officer trainee named Romila Kumar was on break at the Clarence and disappeared, Crowe and a different mistress, one Kati Prien, were upstairs in the hotel having a tryst."

I looked across at Milburn. "We've located the former police records collator, Danielle Mintz, whom Chief Crowe ordered to dispose of the Kumar case materials and cook the Heavitree mainframe to eliminate any mention of the case. It was she who dropped Kumar's dead bio into the Exe. Judging by her description of the weapon, Kumar's bio was killed with the same gas gun that took down Flanagan. She cleaned the weapon and Chief Crowe returned it to the Royal Diane Museum where the curator has the chief on record as a weapons restorer. He has access to whatever he wants whenever he wants it. To get a reduced charge," I concluded, "Ms. Mintz has agreed to testify against the chief."

From deep within the superintendent's WC boomed Parker's dulcet tones, "On foot Sharissa Thule went to Parliament Street and tossed the body up against the southeast wall. She believed it might look like a flying accident. Whoever drove her there either drove between the camera surveillance photons or drove stealth."

Matheson looked at al-Fasi. "And the only vehicles authorized to use image neutralizing software in the county?"

She glanced at Milburn and nodded as she returned Matheson's gaze. "The only vehicles so authorized in the constabulary are the Major Incident Support Team stealth units under Chief Constable Crow's direct command."

The superintendent looked at me. "Getting away with it wasn't enough. He wanted to make a point. It's Artificial Being Emancipation Week and Chief Constable Crowe, valued member of Natural Life, wanted to make a point. He was the one who suggested giving Jaggers and Shad the evening off leaving Parker to catch the Flanagan case. Crowe notified the press to watch out for a really funny story at the High Street end of Parliament, waited fifteen minutes, then had the Exeter Station notify ABCD. The calls were made with a toss phone, but we have the phone records, and soon the phone thanks to Ms. Thule."

DC al-Fasi nodded to herself and looked at Matheson. "Did this Kumar's body die in stasis, as well, superintendent?"

"No. The fellow snapped mentally, crippled another bio, and had to be put in an institution. Poor chap's still there."

"The chief has a lot to answer for," she observed.

"He's a cop. A *chief,*" said PC Milburn to DC al-Fasi. "The stink on us'll never go away."

"It might," said Shad as he jumped off the back of his chair and began pacing on the floor at a crisp waddle. "Devon & Cornwall Constabulary, Exeter CID, and ABCD together, brothers and sisters in blue: we go to the chief constable's office in the name of the law and take this crooked cop and murderer down in front of the nationwide media."

Milburn frowned, thoughts playing across his face. "How you going to get the media in there with us?"

Detective Superintendent Matheson arched his brows innocently and said, "It's just possible, constable, that someone without the permission of either Exeter Station or my office might possibly provide a live feed to the event in HD widescreen." He looked at Shad.

"Complete with EnviroSound and narrated by a celebrity of some note," Shad

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added.

DC al-Fasi leaned forward and nodded at Shad. "Quite a package you've got there, sergeant. I hear you were the duck in all those telly adverts a couple years ago."

"He will be again, soon," I butted in. "The insurance corporation that was honored to have the duck mascot is bringing him back."

"Never did like that bloomin' lizard," she said. "Always talking like a yob." She looked at me and said, "Heard about you too, Inspector Jaggers. Took down some bad ones in London when you were with Metro." She looked at Matheson. "Superintendent, I hear you practically have to get killed to get in this unit. Everybody here—their natural bodies—killed in the line of duty, right?"

"That's correct," he answered.

DC Fatima al-Fasi reached into her pocket and suddenly we could all detect her bio marker beacon. "I had to leave Weymouth, go clean out of Dorset, and do a little truth elongation to get into Exeter CID as a nat. Marker shield cost a bloody fortune at Bio Shack. Been in Exeter CID three years. Heard all the bio jokes, seen too many ABs getting what for and hard done by. I love police work and hate my job. If you'd take me, I'd be honored to serve alongside the likes of you chaps." She smiled really wide. "You blokes go after some really big game."

PC Duke Milburn drummed his fingertips on the arm of his chair. He let out a breath he had apparently been holding. "Well, I guess that just leaves the stink on me. I got no career in the cops after taking town a chief, superintendent, even if I get the bleeding Victoria Cross for it. Do you have to be an AB to be in ABCD?"

Matheson's brows arched. "No. It's not a rule."

"It's either join the ABCD or hit the road sellin' bleedin' toilet brushes."

"I'll call London and see." Matheson shook his head. "We need to focus, people. Although I hate to discourage such an unexpected upturn in recruitment—I'd be pleased to have both of you—there's just one small matter you two need to get out of the way before climbing down to our rung of law enforcement: The arrest of Chief Constable Raymond Crowe. We aren't allowed to make arrests in ABCD."

Al-Fasi and Milburn stood. "Well, we'd best get cracking then," she said.

"Parker," I called. "We're ready to go."

The toilet flushed, the sink water ran, and Parker emerged drying his hands on about ten paper towels. Both al-Fasi and Milburn froze.

"Hi," said the gorilla.

They muttered something unintelligible in response somehow acknowledging Parker as lead on the inquiry.

"Shad," called Matheson, his face suddenly serious.

The duck turned, "Yes sir?"

"During the arrest, with the feed, try to . . ." He cocked his head gently toward Parker. "You know."

"No sweat, superintendent. It's all been taken care of." He looked at the gorilla. "Right, Parker?"

"All taken care of, sir."

"Really? I mean, *really* taken care of, Shad?"

"Water off a duck's back, boss."

"Indeed. And to think that only hours ago I was contemplating fleeing to the Himalayas disguised as a yak." Matheson reached forward to pick up his phone link. "Well then. I think I'll just ring up a few media fellows and give them each an anonymous tip about a great big arrest about to go down." He held up a pale green slip of paper. "Shad, this is the feed frequency?"

"Yes sir."

"Good. Good work, Parker," he said. "All of you," he said to Shad and me. To al-Fasi and Milburn he said, "Good hunting at Middlemoor."

The arrest went nearly as planned. Considering the disturbed lethal violence CC Crowe had exhibited on more

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than one occasion, attempting to resist arrest should have been expected at least by Shad and myself. We were the most experienced detectives there. Arguably Parker was not prepared either, which didn't matter a whit. Parker *looked* prepared.

When our tiny band reached the second floor of Force Headquarters out at the Police College and entered the chief's outer office, DC al-Fasi simply led us past the chief's secretary and a couple of higher-ups patiently waiting in the outer office for their audiences. Milburn followed al-Fasi, Parker followed Milburn, and Shad followed Parker, his internal camera providing real time action to stations across the planet. I brought up the rear in time to see the chief constable rise from his desk to his full two hundred uniformed centimeters, an old fashioned telephone receiver in his hand, mouthing the word "What," his attention on Fatima al-Fasi. She was cautioning him as his face began growing a most unhealthful shade of bluish-red.

"Raymond Crowe," said DC al-Fasi in a clear voice, "you are under arrest. You do not have to say anything, but it may harm your defense if you do not mention when questioned something you may later rely on in court—"

"You!" Crowe growled as he saw Parker standing to al-Fasi's right. *"You! Bloody you!"* With one massive hand he pulled his entire telephone free from its old-fashioned cord and threw it at Parker, who caught it in his right hand and just as quickly flung it back, bouncing it off the chief's head. Chief Crowe teetered on his heels for a split second, then dropped behind his desk.

"What did you see, DS Shad?" I asked immediately.

"I saw DC Parker physically assaulted by the suspect and forced to defend himself, inspector," Shad came back as he flew up onto the desk to get a down shot of the chief out colder than January lager, as the lads used to say back in old Puss in Boots Flight, wot, wot?

PC Milburn put in a call for paramedics, Shad put in a call for Matheson, and I put in a call for Val.

Three final notes on the Parliament Street inquiry. First, once Raymond Crowe was convicted of premeditated murder, DC Fatima al-Fasi and PC Duke Milburn applied for ABCD Interpol, Exeter. London sent it up to Baghdad and Baghdad sent it down to London who sent it down to Exeter. The two of them would, in the opinion of Baghdad, be most valuable in ABCD Exeter and were assigned to that office.

Second, Shad decided to stay on. Agent Stanky worked a deal in which Shad would take a few weeks off from crime busting and spend that time training his replacement while a clone of his famous duck suit matured. When the first of the new adverts was on the telly all the reviewers said they couldn't tell the difference. Val and I could. There never could be another Guy Shad.

Finally, there was another award ceremony, and among the Devon & Cornwall law enforcement recipients was recently promoted Detective Sergeant Ralph Parker, ABCD Interpol, Exeter. HRH Princess Mehitabel insisted on presenting the awards herself, which had all of us in Matheson's office sweating beanbags—all of us but Shad and Parker. Shad said, "I said it's been taken care of. During the arrest of CC Crowe, did Parker disgrace himself and the office in front of the camera?"

We had to admit that he had not. Save for a bit of blood dribbled on the chief's carpet by the chief's own head, the carpet was as clean when we accompanied the chief on his stretcher out the tower entrance as when we entered his office. We had thousands of subsequent media camera shots as evidence, many of them showing DC Parker in rather conservative heroic poses.

Neither Shad nor Parker told Matheson what had changed. At the award ceremony in the Royal Diane Museum audi-

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torium the next spring, as Princess Mehitabel pinned the gong—King's Police Medal for Distinguished Service—to Parker's green sash, I looked down at my green-sashed duck partner and whispered to him, "Give. What did you do to Parker?"

"Madame Fifi's," he whispered back. "The amdroid stylist place on Parliament Street?"

"Yes?"

"Fake fur covered gorilla diapers, Jaggs. The fake fur blends right in with his coat. On special. Check it out. You should see the really cool stuff they have in there for cats, too. Fawkesmas Day comes but once a year."

Gorilla nappies.

I'm afraid the road to the future will be more trying for the lord bishop of Exeter than even he imagines. ■

(EDITOR'S NOTE: Jaggers and Shad appeared earlier in "The Good Kill" [November 2006] *and "The Hangingstone Rat"* [October 2007].*)*

IN TIMES TO COME

Jean-Pierre Normand, the artist who captured an impressive four of the top five spots in last year's AnLab vote for Best Cover, has an original for our December issue, illustrating C. W. Johnson's novelette "Icarus Beach." It's a challenging story to illustrate, about a challenging situation, to say the least: much of it takes place *inside* a star that's about to undergo, shall we say, a major shake-up. Might sound completely impossible, but then, the author is a trained professional (astrophysicist). Don't try this at home!

Kevin Walsh's fact article, "Finding Planemos," surveys the relatively new business of finding extrasolar planets and similar objects: what can now be done, what's been found so far, and the prospects ahead. We'll also have a variety of other items by familiar authors like Robert R. Chase, Jerry Oltion (an unusually thought-provoking seasonal piece), and Geoffrey A. Landis, as well as introducing a promising newcomer or two.

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Science Fact

The Search for the World's First Equestrians

Richard A. Lovett

Once, there was a boy. Or perhaps a girl, but in the cultures of the time, a boy was more likely. We'll call him Khan, although the language groups from which that name would arise wouldn't evolve for thousands of years.

Khan was a hunter—perhaps a young one, still fresh with innovation. One day, as he, his father, uncles, and brothers stalked the thundering beasts of the plains, they cornered a mare in a box canyon, killing her with spears, arrows, and stones. But the mare had a foal that stood trembling nearby, torn between panic and the instinct to stay by its mother.

There were plenty of men to butcher the mare and carry the meat home, and as they set to work, Khan watched the foal. There, he realized, was more meat: not that anyone needed it at the moment. But if he could get it home alive, and if it was old enough to survive, he could keep it until meat was again needed.

Carefully, he fashioned strips of rawhide into a longer line. More carefully still, he approached the foal and wrapped the line around its neck, like he sometimes did with the dogs that lived in his village, sharing meat and fire and hunting with his clan. And slowly, cautiously, he led the foal home.

The foal lived and grew. Hunting was good, and so it was allowed to live, through winter and into spring and on to the next year. By this time, it was a pet—a source of meat only in the direst of emergencies. Then, Khan had another idea. The foal had become large and strong: far larger than the dogs that, as a child, he'd tried to sit on so they could carry him, laughing, around the village until the elders said dogs weren't made to be sat on and be-

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sides, they would bite if you played too rough.

The horse was bigger than the dogs.

One day, Khan led it to a large rock. He climbed onto the rock, and from there, leapt to the horse's back. The animal flinched, but did not buck or try to run. And the course of humanity shifted forever.

Okay, it probably didn't happen exactly like that. More likely, there were many Khans who independently made the same discovery, again and again. But someone had to be first, and the smart money says it probably happened on the Asian steppes, perhaps six thousand years ago.

Trying to prove it, though, has kept archaeologists busy for years.

Archaeology is one of the favorite fields of science fiction. It's perfect for adventure stories: rife with mystery and shadowy stories of origins—a realm of vanished civilizations and priceless treasures. But real archaeology isn't *Indiana Jones*. Yes, the occasional Incan or Egyptian treasure surfaces. In 2005, for example, a team of American and Italian Egyptologists found pieces of the world's oldest seafaring ship, along with a four-thousand-year-old cave on the Red Sea, where Egyptian sailors had created a supply base, then mothballed it. Inside, they found coils of rope and other supplies, neatly stacked for a return that never came.

But such finds are headline-grabbing rarities. Rather than clambering around in teetering ruins, the real work of archaeology increasingly involves chemistry, remote sensing, and even laboratory experiments. Such in fact, is the case with the search for the first signs of horse domestication. This article focuses on horses, but if we ever find traces of vanished civilizations on other planets, the odds are that the work of piecing them together will have a lot more in common with this than with *Tomb Raider*.

First of all, let's define what the horse researchers are looking for. Our friend Khan didn't domesticate anything. He caught a wild horse and tamed it. True domestication involves captive breeding.

This turns out not to be easy. Horses are big, unruly animals, and stallions can be mean. Compared to raising a wild foal as a pet, breeding horses in captivity is a much more difficult task, says British researcher Marsha Levine of the McDonald Institute for Archaeology at the University of Cambridge.[1] In the early days, she argues, it would have been simpler just to capture foals and tame them on an as-needed basis. In fact, she notes, only a few hundred years ago the Plains Indians still preferred stealing horses or capturing wild ones to breeding their own.

Clues in their Genes

Obviously, there did come a time when horses were domesticated. One interesting line of evidence about the manner in which this came about can be found in the genes of modern horses (including today's "wild" ones, which are simply domestic escapees). A 2001 genetic study by biologists at UCLA and three Swedish universities, for example, examined their mitochondrial DNA, which is inherited from their mothers.[2]

[1] Levine's theories, presented in more detail on her web site, http://www.arch.cam.ac.uk/~ml12/index.html, inspired my own tale of Khan.

[2] Mitochondria are cellular powerhouses that help "burn" food to provide energy. To do this efficiently, they contain their own DNA. Mitochondria, with their DNA, are passed from mother to child via the protoplasm of egg cells, rather than from father to child via sperm. This has been used to determine that all humans appear to be descended from one great-to-the-nth grandmother, the so-called "mitochondrial Eve." The work with horses is similar, but reaches a different conclusion.

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It found that modern horses are descended from a large number of wild mares, probably from diverse areas.

Initially, that was taken to mean that horse domestication arose independently in a number of cultures. Then, a more recent study, published in 2004 in *Nature Genetics,* revealed that the male Y chromosomes came from a far more limited number of stallions. This may mean that horses were domesticated by one single clever tribe, and that as the idea spread, others captured additional wild mares but mated them with domestic stallions obtained from their neighbors. That certainly makes sense. Mares are easier to capture and tame, so if there are wild horses around, you might as well get your own, for free. But stallions are a different matter, and if domestic ones are already available, most people might rather trade for one than risk their lives trying to capture a wild one.

Either way, Sandra Olsen, an archaeologist at the Carnegie Museum of Natural History in Pittsburgh, Pennsylvania, believes horses were first domesticated on the Eurasian steppes, that broad swath of grasslands that sweeps from Mongolia to Russia.

For more than a decade, she has been excavating villages from the Botai culture of what is now northern Kazakhstan, looking for evidence that 5,600 years ago, they were already relying heavily on horses for meat, tools, and transportation. These villages are one of two sites vying for the honor of having the earliest signs of horse domestication. (The other is a similar-aged village called Dereivka, in Ukraine.)

There is no doubt that horses played a major role among the Botai. In one village, Olsen's team has recovered more than 300,000 animal-bone fragments. "Of those, over 99 percent are from horses," she says.

Nor has Olsen's team found any indications that the Botai engaged in agriculture. "It was a horse-centric society," she says.

Levine counters that the villagers may also have eaten fish. "We don't know that they were subsisting entirely on horses," she says. "Fish bones don't preserve well, archaeologically."

Still, horses were obviously important to the villagers. (The same is true for Dereivka, which also contains a startling number of horse bones.) Cut marks on the bones indicate that the horses were butchered for meat, and Olsen thinks there is no way the villagers could have killed that many horses simply by hunting. "You have to play Devil's advocate and imagine what conditions were like if they were hunting wild animals on foot," she says. "The villages had 160 or more houses, so how would they sustain themselves and not deplete the herds immediately?"

Levine, on the other hand, makes exactly the same argument *against* domestication. How, she asks, could the villagers graze that many horses nearby without depleting the grasslands?

"There is a tendency among people who study horse bones to say there are lots of horses in this site, [so] that means they're domesticated," she says. "But all it means is that lots of horses died and the bones were brought there." In fact, she says, if you go to more recent sites where horses were known to be domesticated, you don't tend to find such large numbers of bones. "When you find large numbers, that tends to be an indirect indication that they're probably wild," she argues.

Indirect Evidence

One might think it would be easy to figure out if the villagers were raising horses for slaughter, rather than hunting them. After all, domestic horses need equipment such as bridles, lead ropes, and hobbles.

Unfortunately, all of these would have been made from leather thongs, which would long ago have rotted away.

"Organic materials such as leather and wood are only very rarely recoverable from the archaeological record," Levine

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writes on her web site. "Moreover, not only is it possible to ride a horse without the use of a saddle or bridle, but also, during the early stages of horse domestication, it is likely that they were usually ridden that way."

Olsen concurs. If you look at classical Greek statues of people on horseback, she says, "they don't have saddles, horseshoes, or stirrups. And that's in 400 B.C."

The earliest surviving pieces of horse tack were probably "cheekpieces" from bridles. These are fasteners used to help tie together the various thongs of the bridle, near the horse's cheek. Some archaeologists think that odd pieces of worked antler found at Dereivka are cheekpieces, but the artifacts are sufficiently nondescript that Levine dismisses any such identification as wishful thinking. They could be virtually anything, she says.

The earliest unambiguous evidence of horse domestication doesn't come from much before 2000 B.C. From that era, archaeologists have found lots of clearly recognizable cheekpieces, as well as two-wheeled vehicles that look like chariots, buried not only with their wealthy human owners, but with the horses that presumably pulled them.

Chariots, however, are an advanced technology. By the time they appeared, Olsen says, horse domestication is "a done deal. You know you're missing the boat."

Levine concurs. Horses didn't instantly go from being wild to being buried in graves with chariots. "They have to have been domesticated at that stage for some period of time," she says.

With other domestic animals, like dogs and cats, one way to look for traces of domestication is in bone-structure changes resulting from domestic breeding. After all, a modern Chihuahua doesn't look much like the wolflike dogs that were its distant ancestors. But horse skeletons don't start to show much sign of this prior to 1200 B.C. "It's not until late that you start to see good evidence for formal breeds," Olsen says.

Another approach is by looking at ancient horse teeth for signs of bit wear or at the skeletons of aging horses for abnormalities associated with being ridden or worked in other ways.

Unfortunately, such evidence is hard to find. Worse, says Levine, the studies are conducted by archaeologists, not veterinarians, and tend not to be rigorous enough to rule out alternative explanations. "They're interesting," she says, "but I don't think they're very conclusive." Lab tests are being planned, she adds, to find out exactly what type of pressure bareback riding places on a horse's spine, in an effort to better determine the kinds of bone abnormalities to look for in the Botai and Dereivka horses. "The study many not be conclusive, but it's worth giving a try," she says.

Levine herself has studied Botai horse bones for signs of abnormal stresses. But she found nothing. "And I looked for it," she says. "I looked quite hard."

"It's frustrating," Olsen admits. "At the same time it's really fun: a great detective story."

Currently, she is pursuing her ancient "cold case" at the Botai village of Krasnyi Yar, where her team has discovered a circular array of ancient postholes that looks suspiciously like a corral.

That discovery is itself an example of modern archaeology in action. Rather than digging up wide swaths of land, archaeologists can now conduct surveys with ground-penetrating radar and other instruments designed to find subtle variations in the soil's electrical resistivity and magnetic properties. The techniques, collectively referred to as geophysical archaeology, have been used to survey everything from Roman bathhouses, Viking longhouses, and Native American burial mounds to German bunkers destroyed in the D-Day invasion of Normandy.

At Krasnyi Yar, these techniques re-

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vealed 54 pit houses and dozens of postholes. Although the postholes had long ago refilled with dirt, they were visible to the imaging techniques because the fill has a different geophysical signature than the surrounding soil.

It was these postholes that formed the suspicious corral-like arrangements.

Olsen was thrilled. She believes that the best way to figure out how the ancients raised their horses is by watching how modern cultures do so in similar circumstances. In 1944, the Russians produced a golden opportunity for this by forcing the horse-herding Kazakhs onto communes: year-round villages not all that different from those inhabited by the Botai.

"What they do is probably analogous to what they did in ancient Kazakhstan," Olsen says.

And what do the modern villagers do? They corral the horses near the villages at night, then take them out to pasture during the day. To do that, you need corrals: just like those found in Krasnyi Yar.

Dung Heap

Finding the circular structures was exciting enough. But then the scientists had the brainstorm of looking at the paddock soil for traces of ancient horse manure.

What they found were phosphates, which are one of the primary nutrients contained in animal manure. At a 2006 meeting of the Geological Society of America, Andrew Stiff, a graduate student with the project, reported that phosphate levels in soil samples taken from within one of the paddocks were ten times higher than those in the adjacent soil.

High phosphate levels, however, can also be created by cooking fires. To rule that out, the researchers examined another mineral, potassium, which should also have been elevated if hearth fires had been the cause. It wasn't, indicating that the find indeed represents manure.

Phosphate isn't the only nutrient contained in manure. Manure is also high in nitrates—and these were not elevated within the paddock. But the absence of nitrates isn't actually bad news, says Rosemary Capo, a professor at the University of Pittsburgh who is also a member of the team. That's because nitrates easily leach out of soil in rainstorms or are decomposed by bacteria. Phosphates can remain for millennia.

Thus, the lack of nitrates indicates that the phosphates aren't recent contaminants from a later corral built on the same site. "It suggests we've got old stuff," Capo says.

Other archaeological evidence indicates that the horses were raised in the village rather than being hunted in the surrounding wildlands.

One line of evidence comes from the fact that complete horse skeletons, including skulls and vertebrae, are found in the villages. Hunters, Olsen argues, wouldn't have bothered to bring back these heavy, useless bones. "We call it the 'schlep effect,'" she says. Instead, they would have butchered their kills in the field and carried back only the parts they needed.

Furthermore, the archaeologists haven't found many arrowheads at the site, something that should have been plentiful in a hunting culture. And when the scientists used the latest analytical tests to check the arrowheads for ancient blood residues, Olsen says, what blood they found was human.

Also revealing are the ages of the animals that were slaughtered. "Between 30 and 50 percent were killed young, which indicates culling," Olsen says. "That's standard in horse domestication."

Levine has a different interpretation. The horses, she says, appear to have died at ages roughly proportional to what would be found in a living herd, "as if a catastrophe took down the whole herd at once. This is typical of random hunting or herd driving [in the hunt]. . . . If you're raising them for meat,

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you kill them around age three or four."

Perhaps, she says, the circular structure was a holding pen for wild animals, corralled for subsequent slaughter. "American Indians used to chase [wild] horses into a corral," she says, although she notes that doing so in the middle of a village "might have been tricky."

Or perhaps the corral was used for a few animals, which, like Khan's foal, were captured wild, then tamed. Among the vast numbers of horse bones found in the villages, it would be difficult to distinguish a few tame horses from thousands of wild ones.

Similar concerns have been raised about the horse bones at Dereivka. There, Levine says, the most common age was seven to eight years. "That's not a time when you would butcher animals for meat," she says. But if Dereivka's hunters were selectively stalking wild animals in their prime, that's exactly the type of age distribution you might expect.

Why would hunters focus on the animals most able to put up a good fight, rather than the young, old, or lame? In a 1998 study in the journal *Antiquity*, Levine reported that horse meat is much higher in healthy, polyunsaturated fats than is fat from ruminants, such as cows and sheep. The ancients wouldn't have known about polyunsaturated fats, but they might have known that horsemeat is healthier to eat, and that its fat was a more easily digestible baby food than other kinds of fat.

"When I interviewed [modern] Kazakhs, I found that horse fat and camel hump were the most desirable for weaning food," she says. "These are highly digestible foods for babies." They are often given to infants mixed with pasta, or simply cut into small lumps for them to suck on, she adds.

If you're hunting horses, therefore, "what you want is a big, fat male." Not to mention that if you're stalking a herd of horses, the stallion will turn to attack, protecting the mares. "The result is that the humans will kill the stallion first," she says. "And if you're hunting for meat, that's all you need."

Her conclusion: the Botai used hunting tactics that killed off entire herds; the people of Dereivka stalked individual animals, favoring stallions in the prime of life. There is no need, she says, to presume that either group was raising domestic horses for slaughter.

But Olsen has still more evidence to back up her belief that the Botai had mastered horsemanship. One clue comes from the manner in which they made their stone tools. Without beasts of burden, it's a lot more convenient to do so at the flint quarry, rather than lugging large hunks of rock back home. "But they brought in big chunks and made tools [at the village]," she says. "That indicates that they had packhorses."

Also, some of the most common tools found in the villages are thong-smoothers, used to make rawhide thongs, such as would be used in bridles and hobbles. Even more common are hide-scrapers—also needed to make leather thongs.

Still, none of this is proof.

"We're talking about lots of different types of indirect evidence," Levine says. "It doesn't prove domestication; it's just interesting and possibly points in that direction."

Olsen counters that all of the evidence points in the same direction. When you put it together, she says, the simplest explanation is that the horses were domesticated.

Bye-bye, Indiana Jones; Hello, *CSI*

Ultimately, the answer may lie in additional secrets hiding in the soil of the ancient animal pen.

Only a few days before the geology meeting, Olsen learned that the soil was also ten times saltier than that outside the pen. The probable source: urine, presumably from horses. More importantly, her team is analyzing the soil for

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traces of fatty chemicals unique to horse manure. "If we find those, that really nails it," she says.

Chemists are also analyzing pottery fragments in the hope of finding traces of fats from mare's milk. (Even today, the people of the Eurasian steppes consume large quantities of mare's milk.) "That will really be the smoking gun," Olsen says, "because you don't want to milk a wild mare."

Levine agrees that this would be an extremely strong piece of evidence. "I don't think you can milk a wild horse, either," she says.

Another step is to conduct isotope analyses of trace elements such as strontium in the horse's teeth to determine where the animals were born and how far they ranged. This work is still in its early stages, but, Olsen says: "We are finding indications that one horse seems to have been born in the south and maybe traded into the village . . . We're reconstructing their lifestyle and finding out a lot about these people."

For example, she says, horse rearing would explain why the Botai were able to stay put in year-round villages despite the region's harsh winters. "Horses can survive ice storms and don't need heated barns or winter fodder," she says.

But no matter what the ultimate answer turns out to be at Krasnyi Yar, the quest for the earliest site of horse domestication continues. Ancient as their activities were, Olsen doesn't believe the Botai were the first. "What is the chance that you find the first [example] of anything?" she asks.

Meanwhile, archaeological methods continue to evolve. Old techniques focused on direct evidence, not just in the hunt for signs of horse domestication but for everything else. Classic tales of crawling through underground tunnels have their roots in these older techniques, epitomized by early twentieth century finds in Egypt, such as King Tutankhamen's tomb.

But, while the big, showy discoveries are increasingly difficult to find, techniques have become more and more sophisticated for teasing indirect evidence out of the most mundane sources.

"Archaeology is heading [toward] a lot more physics and chemistry," Olsen says.

The trend is so strong, in fact, that future archaeologists may lament how all of their predecessors cavalierly threw away the best materials from their digs.

What treasures are we currently discarding? "The soil," she says.

If Olsen's right, astroarchaeologists of the future won't be tromping willy-nilly over any ancient sites they find in their space explorations. More likely, they'll be scared to even walk on them, fearful of destroying trace evidence.

Sadly for those who like the drama of crumbling edifices, trapdoors, and secret passageways, archaeology of the future may be more like crime-scene investigation than rambunctious old Indiana Jones. ■

IMAGES AVAILABLE

http://www.geosociety.org/news/pr/06-49.htm

About the Author:

Richard A. Lovett has been writing full-time since 1989. He has been hanging out around horses and horse people off and on for a lot longer. He grew up on science fiction, majored in astrophysics, got a Ph.D. in economics, and did a stint as a law professor. More recently, he discovered geophysics and has spent nearly as much time with geophysicists as with horses, finding them to be nearly as fun and much less likely to bite. The author of six books and 2,700 articles, he is a regular contributor to *Analog*.

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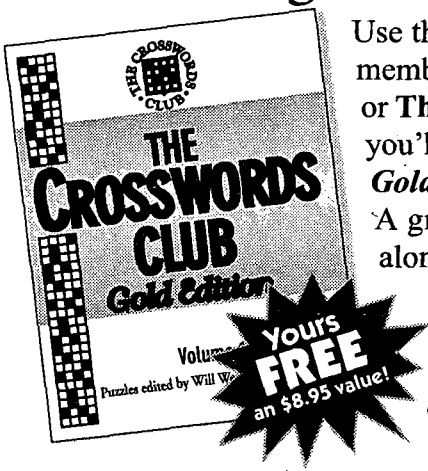

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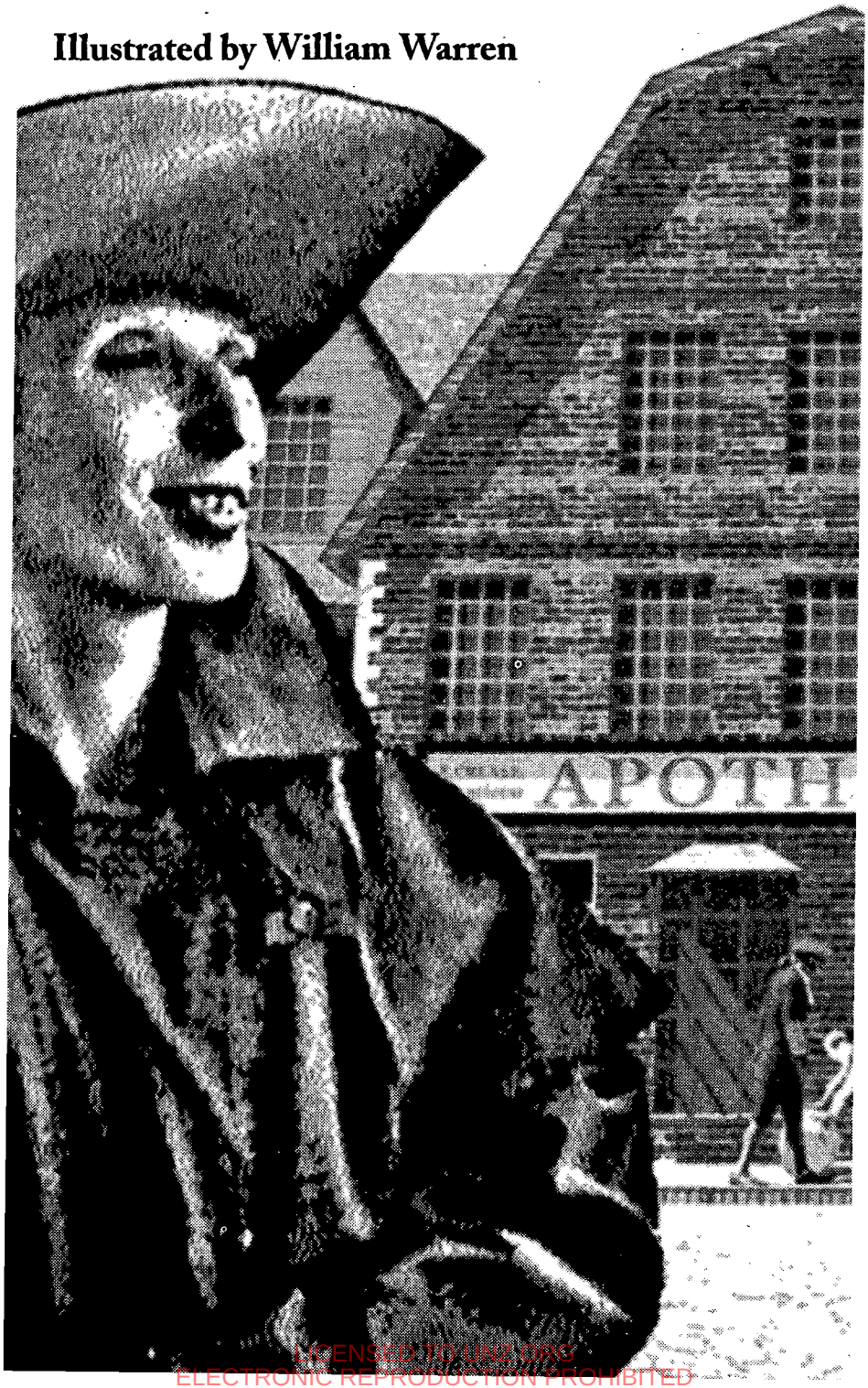

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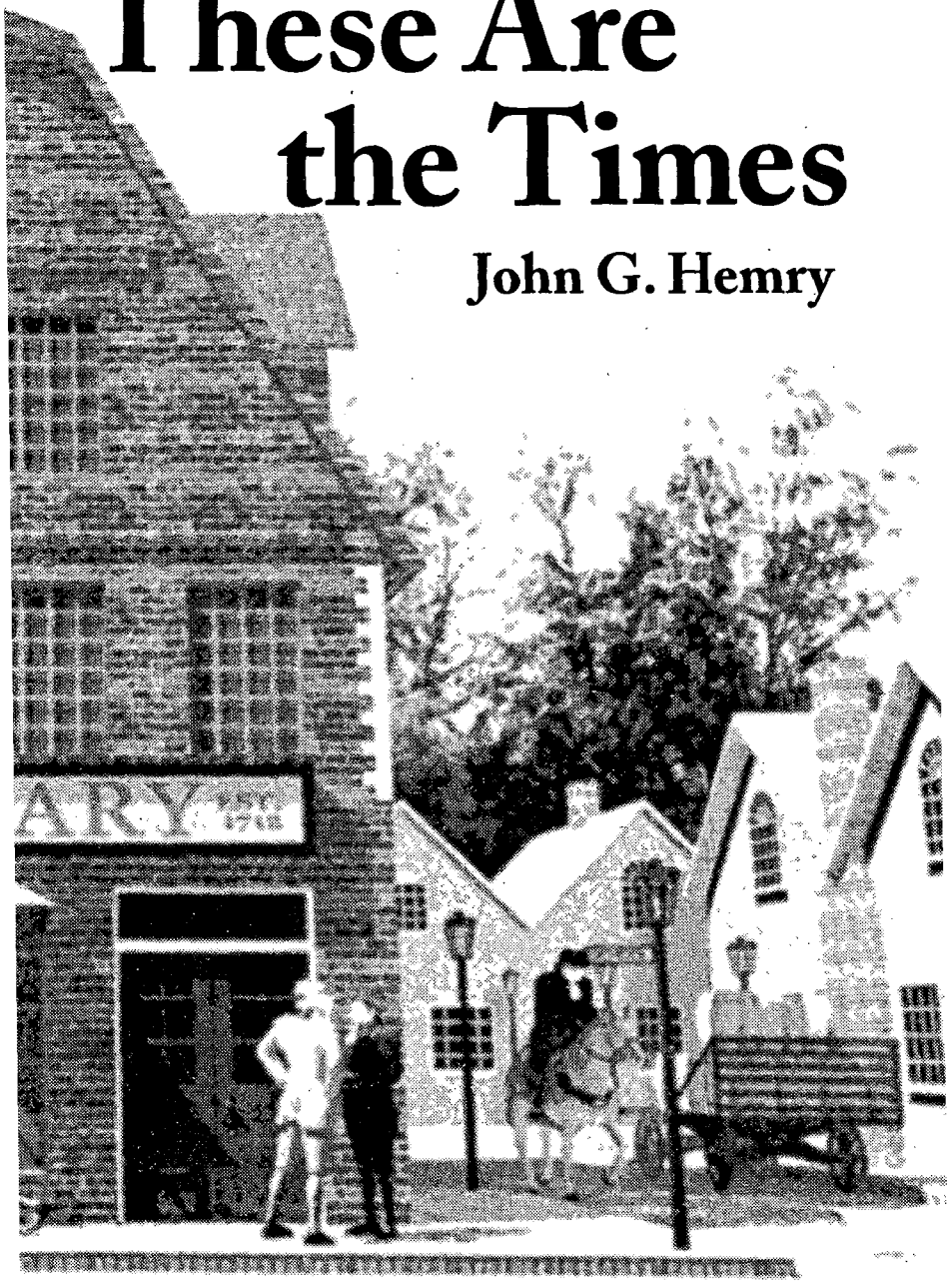
These Are the Times

John G. Hemry



'ractical time travel could make a historian's
ob a lot simpler—or a lot more complicated!

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Like different people, some places and times in the past attract a lot more attention than others. Sometimes a particular there and then only needs a few Temporal Interventionists dropping by before every question is pretty much answered. Lady Godiva, for example, who really did do her bareback ride, but no one who saw her picture in action once wanted to see it again. They probably forgave the taxes just so she'd put her clothes back on.

Other places get a fairly constant stream of TIs either trying to change things for their clients or trying to collect information from the past. It's hard to visit Washington, D.C. anytime during the first three centuries of the United States, for example, without tripping over fellow TIs.

Then there's very specific there and thens, places and times where something special happened, a turning point, and everyone wants to be there.

Like Boston, Massachusetts, in April 1775 C.E.

I'd landed what should have been a nice, simple job. No Interventions this time by someone wanting to ensure Great-Great-Great-etc.-Uncle Ned made it to Lexington Green so they'd have a hero in the family instead of an ancestor who'd stayed in bed with a hangover that morning, or someone wanting to murder Paul Revere or poison his horse. That stuff could get hazardous, especially with so many TIs from different centuries clustered in this here and now all trying to either carry out their own Interventions or stop someone else from achieving their Intervention.

There wasn't anything dangerous in my job description. I was supposed to jump back uptime before sunset on the eighteenth, well before serious shooting started, and any travel by me near decision points or critical individuals would be finished well before then. No, all I had to worry about was being caught in the crossfire between TIs fighting before that time to either create or block Interventions. Unfortunately, this here and now had a lot of crossfire, and as a TI myself, I looked entirely too much like one of the combatants, so I stayed as alert as anyone else who knew a secret war was underway around them. That's aside from the fact that I was trying to blend in with the locals, who were also ready and willing to commit potentially homicidal actions against each other.

I'd been sent back by the Virtual City project, whose latest plan was to record everything said and done in Boston and the nearby surrounding area on 18 and 19 April 1775. Important places, like where the Sons of Liberty had met, had long since been bugged, so you could get detailed transcripts of everything said by anyone of any importance in the city on those days. But the Virtual City project aimed to create a visual and auditory record of the entire place and time. Once all of the data from the thousands of bugs was integrated, individuals several centuries from 1775 would be able to "walk" down the streets of this here and now, go into just about any building, and hear and see what had actually happened to anyone, not just the famous people.

Historians loved it, people who enjoyed soap operas loved it, privacy advocates screamed bloody murder and pointed out that people farther uptime could be doing the same thing to us. But the law said no such project could include any living person, so not enough people who were alive objected to it. And like every other TI, my implanted personal assistant made sure I was invisible to the bugs, so no future voyeurs would be eyeing me. Historians insisted on that so we wouldn't mess up the record, which is sort of ridiculous since TIs spend a good part of their time messing up history. It's what we do. Historians love us for the facts we can tell them and hate us for changing the facts we tell them.

But I wasn't out to change anything this time. My job consisted of walking

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down a preplanned grid of streets while the bug deployment gear built into the heavy coat I wore spat out bugs according to its own programming. To the casual observer here and now who got close enough to one, the bugs looked like gnats as they flitted into position on buildings or inside windows and doors to observe activity inside. Each had a nice array of visual and audio recording gear that would send their data to collection arrays, which I and other TIs had dropped off in various places where they looked like rocks. If any local picked one up, they'd feel like rocks, too.

All I had to do was keep one internal eye focused on the map my implanted Assistant named Jeannie displayed my route on, and one external eye on the assorted denizens of Boston, other obstacles to be avoided, and anything suspicious or dangerous.

Not exactly safe, but not the most hazardous job I'd ever had, either. Everything went fine until I realized somebody was following me.

He was aristocratic looking, fair haired, wearing very nice clothes, and seemed the sort of guy who robbed people by embezzling from the bank he owned rather than the sort who followed someone down an alley and hit them on the head. But he kept showing up in my peripheral vision and that got me worried.

I finally turned quickly and focused on him for a moment before turning away again. *Jeannie, lock on. Can you ID this guy?* Internal communications come in very useful at such times.

Negative, Jeannie responded. *You've never encountered him before, but he's not a local. He does have an implanted time-jump mechanism. I can't be certain from this distance, but it seems a couple of generations more primitive than yours, placing the man's origin a little more than a century before our home now.*

Any weapons?

None detected.

Which didn't mean none were there. But I had to know what this guy wanted with me, and accosting him in public was less risky than letting him choose the moment. I turned the next corner as my preplanned route directed, but then pivoted and took several quick steps back to the corner just in time to meet my tail as he came around. "Hi, citizen," I greeted him in a low voice as the crowds of locals walked past us, using the anachronistic term on purpose to get his reaction.

He glowered at me. "You've got your nerve." High-class British accent, and very well done. I wondered if it was authentic. "Do you think I don't know what you're doing?"

"Since you've got an implanted Assistant and jump mechanism I'm sure you know what I'm doing. So what? It's not about you."

His glower changed into a snarl. "I suppose it's just a coincidence that you're planting sensors in the same area where I was waylaid tomorrow."

"As far as I know, yes." Wait a minute. If he was here tomorrow and knew what had happened, that meant he was also probably here today. "You doubled-back? You've got dual-presence in this here and now, and both within this city?" Instead of answering directly, he smiled unpleasantly. "Don't you know what that can do to someone's mind?" No one knows why, but being consciously present in the same here and now more than once can create a lot of problems that mimic old ailments like schizophrenia and paranoia. The closer you physically are, the worse the effects are.

"That's only a problem for weak-minded mongrels," he replied with that supercilious sneer that only a many-generational member of the upper class can really carry off. "You think yourself very superior. But you've met your match."

"Look, I'm not—"

"You won't stop me!" He must be one

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of the guys trying an Intervention. I took a moment to wonder what, but it didn't matter much. Everyone who made any difference in the events of the next few days had TI bodyguards secretly following them everywhere. Every building that mattered had other TIs guarding them and sweeping them for bombs and such. The people who wanted to keep history the way it more or less was in general had a lot more money than the ones who wanted to change things, and could hire more TIs to protect turning points in history. Some of them must have taken out this Brit tomorrow.

His sneer turned contemptuous. "I know your kind. Sit back safely, give the orders, send out your hooligans to do your dirty work while you pull the strings within your lair. It's a regular Moriarty you consider yourself, isn't it?"

"Actually, no."

He leaned close, his face reddening with anger. "You stopped me tomorrow, but you won't stop me tomorrow this time. Try to sic your hounds on me again and I'll be ready."

I leaned a little closer, too, emphasizing my words. "I don't know you, I don't care what you're trying to do, I'm not here on Intervention or Counter-Intervention or Counter-Counter-Intervention. I'm just working for a data collection project. Go away and I promise you any further interactions between us will be purely by chance."

"You lie. I have my eye on you Moriarty. Neither you nor your ruffians will be safe if you try to cross me again."

I started losing my temper, too. "Listen, you moron. I'm not Moriarty, but if you mess with *me* I'll do a Wellington on you. Understand?"

His eyes narrowed, he shifted his weight, and I braced for him to jump me. I've got a tranquilizer crystal shooter embedded in one finger that can knock out someone for a long time, and if necessary, I'd use it on this loon. But he just glanced around, taking in the crowds passing by, then stepped back slightly. "Right, Yank. Think you can rule the world, eh? And all time as well. Not bloody likely. Keep yourself and your brutes away from me and my plans." Then he spun about and vanished rapidly around the corner.

I blew out a long breath, relaxed, then started walking my route again. *Jeannie, any idea what that last little speech of his was about?*

He seems to believe that you're a citizen of the United States, which supplanted the United Kingdom as the world's most powerful political entity.

That figured. Someone out to try to cause the U.K. to stay on top of the world longer than it had. Since I didn't intend going anywhere near any potential targets for someone like that, he'd hopefully go off and follow some other innocent TI through the streets of Boston.

My route took me down toward the docks, where the smell of the sea, rotting fish, and raw sewage got worse. Even though the port had been closed by British authorities since the Boston Tea Party a while back, there was still plenty of street traffic here. The narrow lane ahead was partially blocked by a cart holding some of those fish, so I worked through the throng squeezing past on one side.

Standing against a building up ahead was a man wearing a cloak draped around him, his tricorn hat pulled low on his forehead. He looked up as I drew near and our eyes locked.

I came to a dead stop, drawing some mumbles of anger from those who had to suddenly avoid me.

The boat-cloaked figure stepped forward and extended one hand. "Thomas? I'm Palmer. I trust you remember me from London?"

"Palmer?" I took the hand, which would have been slim on a man. "Fancy meeting you here."

"I had business." Her voice sounded deeper than I recalled, probably because her own Assistant was tweaking her vo-

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cal cords so she'd pass as a male. The locally fashionable male wig helped, too, as did the clothes. Locals expecting to see a man would see one. "It's nice to see you here and now."

Jeannie actually sounded happy. *I've established contact with her Assistant. This meeting is after our last encounter in London but prior to any other encounters.* That's the sort of thing TIs have to straighten out right away when they meet someone they know. Have I already seen you again before or after this? What did we say or do? It gets confusing. But no problem this time.

I realized I was grinning like an idiot. "Yeah. Very nice to see you, too."

"Going somewhere?" Pam asked. I nodded. "May I accompany you?" Another nod, and we set off down the street, speaking in low voices.

"Pam, what brings you to Boston?"

"Palmer," she murmured back. "I get really tired of enduring male attitudes toward women in downtime places like this, and even more tired of enduring the clothes they're expected to wear. It's easier to pass as a man at this time of year when I can wear a cloak. What are you up to?"

"Something called the Virtual City project. Do you know about it?" Maybe she'd even walked through it.

"Annie told me about it," Pam advised. Annie must be her Assistant. "She's happy to be talking to Jeannie again."

"Yeah, Jeannie's thrilled, too." I gave Pam a speculative look. She lived way uptime from me. "I guess you could tell me how the project comes out."

She grinned back at me. "Could. Won't."

Because TIs don't share things they know about other TIs' futures. That's the rule anyway, though I know of TIs who've broken it, either to help another TI or because they want to mess up another TI. "I hope the fact that you're smiling means nothing serious happens to me."

Pam looked away, studying the buildings around us. "Serious? I don't know. Harmful, no, I don't know of anything like that."

Enigmatic at best, but she didn't seem willing to go into more detail and I couldn't press her on the issue. "So what brings a nice girl like you to a here and now like this?"

"Boston? Boston's full of nice girls here and now," Pam replied.

"Not down by the docks."

"I wouldn't know. I'm not a sailor."

"Are you doing an Intervention you can't talk about?"

She shook her head. "No. Data collection. I need to be in Lexington the day after tomorrow."

"The day after tomorrow? The nineteenth? That's the day." I gave her a frankly skeptical look. "Data collection? Lexington on 19 April 1775 has more bugs planted in it than the Amazon rainforest. There's still something they haven't got even in your time?"

Pam nodded. "The shot."

"The shot?"

"The shot."

I got it then. The 'shot heard 'round the world.' Two forces facing each other, American militia and British regulars, both ordered not to fire unless fired upon. A shot rings out from somewhere, and both sides start shooting. The start of the American Revolution. But who fired that first shot? "They still haven't found the shooter?"

"Nope." Pam spread her hands in frustration. "It wasn't from either of the forces on the Green. They've tried triangulating, but the sound echoes and reechoes in weird ways. It can't be tied to any window or door or open area. Sound analysis says it's a gunshot of some kind, but can't identify any weapon, of this period or any other, that matches it. So I'm planting more gear to try to nail down the spot and find the person responsible." She caught my expression. "What's the matter?"

"Lexington then and there is full of

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TIs and crazies from a half dozen centuries, Pam. They must be tripping over each other. I'm just worried."

She smiled at me. "About me? We saved London together, remember? I'm a big girl, and unlike certain guys I know I carry heavy artillery." Pam twitched her arm then turned her hand slightly, and I saw her pistol gleaming in her palm, all smooth curves, beautiful and deadly. A description that also matched Pam in some ways, I realized. But in good ways. Then she turned her hand again and the weapon vanished. "Thanks for caring, though."

"I just met a crazy a little while ago," I told her. "Some Brit with a snooty attitude who called me a Yank. He's planning something."

Pam shook her head. "You mean like him?" She looked to one side where a seaman in a captain's uniform was passing. "Or her?" She turned her head and gazed at an elegant woman wearing a dress that looked like it must be worth a lot here and now. "They've all got jump mechs. Maybe one of them will take care of your Brit."

"I hope so. I swear he would've attacked me if we'd been alone. You can spot them that far away, huh?" Pam came from a century uptime from me, and had correspondingly more advanced capabilities for her Assistant.

"Yup." She paused for a moment. "So how come you never came up to see me?"

"Because I couldn't raise the money." Making a time jump for a date was the sort of luxury only the insanely rich indulged in, but I'd tried to see if I could swing it. "I've heard a lot of loan dealers laugh at me lately. I sure am glad we ran into each other here."

Pam gave me another smile, and I knew her Assistant had automatically analyzed my physiological reactions and told her that I was being truthful. Sometimes that's annoying, but this time I was glad she didn't have to wonder. "Same here. I couldn't afford a jump down to your time on my own."

She's not lying, Jeannie told me.

I already knew that. Pam wouldn't lie to me. I checked my internal map. "I've got about another kilometer to go this afternoon and then I get to break for the night. They don't want me wandering around in the evening with so many British soldiers all over the place watching for suspicious Colonials. Are you free?"

"Sure am." She smiled just the way I remembered from when we'd someday meet in London, and we set off along my route, talking about this, that, and everything. I didn't notice the snooty Brit following me anymore so I stopped worrying about him and concentrated on Pam.

Pam led me back to the inn where she had a room. "How'd you manage a private room?" I wondered.

"It's small, and I paid plenty, but I couldn't exactly share." She sighed as we entered the smoky gloom of the inn's main room. A glowing fire cast more light than the lanterns set around the room, and most of the tables were occupied by men with pipes, their earnest visages as they debated politics illuminated by the radiance from their pipe bowls. Jeannie went to work filtering the second-hand smoke out of my lungs, suppressing my sneeze reflex and curbing the irritation to my eyes so they didn't water. A good Assistant never lets you down. "Want a drink?" Pam asked.

"How's the beer here?"

"Safe enough. Not bad. Have you tried flip?"

"No. Should I?"

Pam grinned again and beckoned to a serving wench. One of the neat things about being a TI is that you actually get to be served by real serving wenches. This one had seen better days, or maybe this had just been a long day, but she smiled beguilingly at Pam, who must have appeared a pretty good-looking young man through the haze filling the

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air. "Flip for two," Pam directed.

I watched doubtfully as the woman broke three eggs into a big mug, added some irregular brown lumps of sugar, tossed in a couple of jiggers of rum and brandy, beat the mess vigorously, then filled the mug the rest of the way with beer. Carrying the mug over to the fireplace, she yanked a glowing hot poker out of the fire and plunged it into the concoction for a few moments until foam rose up, then brought what certainly qualified as a 'mixed drink' to our table along with another smile for Pam.

Then she did it once more and brought me the second mug, though Pam got the smile again.

I tasted cautiously. "How dangerous is this?"

"If your shots are up to date and your Assistant is on the ball? Not very." Pam took a big drink. "It grows on you."

"I can believe it grows *in* you." I gave the server a glance where she was leaning against the bar. "If that woman could see under your cloak she'd be disappointed."

"That's me," Pam admitted lightly. "Breaking hearts all through downtime. Usually it's men's hearts, though."

"You damn near broke mine," I agreed.

Pam's smile disappeared. "Really?"

"Yeah. I spent a lot of time trying to figure out how to contact you a century uptime from me. It's not easy. There's too many ways for a message to go astray, and I needed to make sure you wouldn't see it before we'd met."

"That'd be hard to set up," she agreed, taking another long draw on her mug. "People with TI mindsets don't pay attention to 'do not open file until X date' instructions. Drink your flip."

"Are you trying to get me drunk?" She laughed, because Assistants only let someone get a buzz on before they start filtering out the alcohol. We can drink pure grain alcohol all night and not feel it. "Look, about the day after tomorrow—"

Pam made a shushing gesture. "Finish your drink and we'll go up to my room to talk in private." Then she grinned again. "Hey, I invited you to come up and this time you can."

A pair of empty mugs later I followed Pam toward the stairs after she snagged a lit lantern. A harried-looking woman intercepted us on the way to the stairs and gave me and then Pam a hard look. Pam obligingly hauled out some coins and dropped them into the woman's palm, who smiled in a way that showed teeth in serious need of dental care and hustled away. "Innkeeper," Pam explained as we went up the narrow, steep stairs. "She thought I was trying to sneak someone else into the room."

It was common practice here and now for men to share beds just to save money. The landlady must have thought Pam was trying to sublet half of 'his' bed and pocket the cash. "You paid for me?"

"It was easier than worrying about her spying on us while you're up there. I'll put it on my expense account." Pam led the way down a corridor as narrow as the staircase, to another small set of steep stairs that led up again and ended in an even narrower door. "And, Annie says no one has disturbed my room." She pulled open the door and gestured inside. "Welcome to the Boston Palace circa 1775 C.E."

The room had a bed, a small dresser with a washbasin and cracked pitcher of water, and not much else except a small, high window in which sealed shutters made do in place of glass. Not that there was room for much more than that. Pam waved me to the bed, set the lantern on the dresser, then sat down beside me. "Annie says we're clear of bugs, even the ones you're spreading around. She's got a beautiful suite of jamming capabilities."

Sitting close to Pam, I couldn't help thinking that she had some beautiful qualities, too. Pam pulled off the wig she'd been wearing and tossed it onto the dresser, then shrugged out of the

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cloak. Her coat was nicely cut to still do a pretty good job of concealing her woman's figure even without the cloak. "Now, don't worry about me," she added, her voice going back to its normal pitch now that we were alone. "I'm not going to get in anybody's way. I just need to deploy the gear and then step back and let it search for the shooter."

"At Lexington on 19 April 1775," I added.

"Do you know any reason why anyone would be targeting me?" she asked.

"No, but there was no reason for that guy to come after me, either. I don't think he was a TI. I think he was an amateur out to change history."

"You're probably right," Pam conceded. "Boston in April 1775 is the sort of then and there that attracts amateurs and fanatics."

"And he's here and now multiple times."

"You're kidding! What an idiot," Pam observed.

"You didn't seem that worried about running into yourself when we'll be in London," I pointed out.

"Of course I was. I just didn't want to admit that to some guy I'd just met. But this nutcase isn't after me. You keep your eye out for him and relax about me. I'm not in any more danger than you are."

That wasn't exactly reassuring. "You asked me up here just to tell me that?" I probably sounded a little angry and I was. I wanted Pam to take my worries seriously.

"Not just for that." She leaned over slightly, her shoulder brushing mine.

It felt comfortable up here, and the flip had left me with a happy buzz. I'd spent a lot of nights thinking about Pam, and here she was sitting beside me. Sitting real close beside me.

Pam looked over at me for a long moment, then stood up and peeled off her coat, dropping it onto the small dresser. When I'd first seen her well over a hundred years from now she'd been wearing clothes appropriate for an Edwardian English lady, which weren't exactly revealing. The cloak and coat she'd been wearing today didn't show much of what was underneath either. But now, though the light from the lantern wasn't great, it was plenty good enough to reveal that Pam looked very good in tight breeches.

She turned back to face me, caught my gaze and raised an eyebrow. "Care to share your thoughts?"

Since I was wearing tight breeches, too, she probably knew exactly what I was thinking. I just couldn't tell how she felt about it, but as John Paul Jones said (or would say in about twenty years or so) 'he who will not risk cannot win.' "I'm thinking I wish I didn't have to go back to the room I've got."

"Worried about British sentries?" Pam asked innocently.

Jeannie chose that moment to pipe up. *Her breathing is speeding up.*

Thanks. Now go into passive mode. "Not really. I'd just like to stay here with you tonight," I told Pam.

Her lips curved in a slow smile. "I was hoping you'd help me get out of all of these buttons. Just make sure you don't rip any. I need to wear this stuff again tomorrow, and I hate sewing."

As it turned out, I did rip a couple toward the end, but by that point Pam was as eager to get the clothing off as I was and didn't raise any fuss.

I woke the next morning to the sound of water and looked over to see Pam standing next to me stark naked, her feet in a big shallow tin dish as she rinsed off soap. "If you want a bath, too, you'll need to use the same water," she cautioned.

"Oh boy."

Pam rolled her eyes in a silent commentary on males that must be part of women's genetic makeup, because I've seen it in every century and place I've ever visited. She toweled off quickly and started pulling on things that needed

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buttoning, giving me an accusing look as she found a rip. I hastily cleaned up and started dressing as well, trying to think what I should say.

Pam checked herself in the small mirror when she'd got just about everything on, then suddenly turned to face me. "Confession time. I knew you'd be here and now."

My own half-formed speech, professing long-term interest but regret over the impossibility of a relationship when our home nows were a century apart, dissolved under a wave of surprise. "You did?"

"The TI central records said you'd worked the Virtual City project here and now."

I frowned. "Those records are confidential."

"Not anymore. They changed that a couple of decades ago. Or about eighty years from your home now. They figured it might help keep TIs from tripping over each other." She shrugged. "I used it to set up a meeting. I found someone who wanted a TI to make a run here and took the contract. The project records showed the routes you'd been assigned to cover."

"You wanted to meet me that much?" I must have sounded stupid, but it had never occurred to me that someone like Pam would go to that kind of trouble on my account.

"Yeah. I knew you'd never be able to set up a meeting with me since I was uptime from you. And . . . you did seem kind of interested in that."

"Very interested," I agreed. "Should I say it?"

"Only if you want to, and mean it."

"Then I will. Pam, I fell in love with you in London. I didn't realize that until I met you again before then." She smiled happily. "I want to be with you long-term." Time for the cold water of reality. "But what are the odds that we'll be able to swing more meetings like this in the future in the past?"

"Not great," Pam admitted, then spoke in a rush. "Have you ever considered emigrating?"

"Emigrating?" That floored me. Sure, everyone thinks about it at one point or another, the chance to move to another time within the band of centuries where TIs operate from and make it your home now. But hardly anyone does. The rules are very tight, and the idea of leaving everything you know is hard to stomach. So most people never really give it serious consideration. "You really mean that?"

"Yeah." Pam sat down next to me again, looking at the floor, squeezing her interlocked hands together anxiously. "I didn't know if I'd ask you, not absolutely for sure, not until I'd spent more time with you. But I do mean it. I can sponsor you. We worked really well together in the future. I couldn't stop remembering the time we'll spend together in London. I'll have a great time with you there and then. I love you, too. And our Assistants like each other."

"I noticed." I took a deep breath. "What about you? Emigrating?"

She grimaced. "You know the rules, Tom. If I emigrated downtime I'd have to have my implanted tech downgraded to match your level. That would be like giving Annie a lobotomy. I can't do that."

"I wouldn't ask you to. Sorry I didn't remember that."

"But if you came up with me, Jeannie would get an upgrade," Pam pointed out, then looked slightly guilty at dangling that lure in front of me.

"Yeah. She would," I agreed in tones designed to show I didn't mind Pam bringing that up. I breathed deep again, thinking. It was a huge thing. And yet I'd been through century after century and never found anyone like Pam. What kind of idiot would turn down this opportunity? "Can I think about it for a little while? I think I'll want to, but I need a little while, okay?"

Pam grinned and kissed me. "I've got another forty-two hours here. Long

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enough?"

"It ought to be." I kissed her back. "Especially if we spend it in this bed."

She laughed and shoved me away. "I've got work to do, and I bet you do, too. Besides, I don't want to think you're being motivated by nothing but lust."

"There's nothing wrong with lust," I pointed out. "But, no. I wouldn't consider emigrating on the basis of lust even for Helen of Troy." Who *was* incredibly hot, though not even remotely blond like she used to be portrayed. Which was okay, because I'm a bit skittish around blondes after some negative experiences I've had.

"Helen was a slut," Pam responded shortly. Female TIs tend to have strong opinions about Helen, maybe because male TIs tend to talk about her.

"Nothing like you," I agreed quickly.

"Get your buttons buttoned," Pam ordered, standing up and grabbing her wig. "I need to turn back into Palmer and check out routes to Lexington."

"Are you staying there tonight?"

I must have sounded tragic because she grinned at me. "No. I can't. Between the locals and all the TIs hiding in the bushes the place is full. I'll scout the route today, then get in very early tomorrow and deploy my collection gear while everyone else is scrambling around watching each other. The focus of attention will be on the moving British troops and the Colonial VIPs then, so nobody will worry about one more TI moving through the countryside."

"I'm not so sure. It's not what you're doing, Pam, it's what some nutcase Interventionist might *think* you're doing. Like the guy who threatened me."

"You'll wrap up your job this afternoon, right?" Pam answered. "Want to meet in Cambridge at sunset? I don't want to have to worry about sneaking out of Boston tonight with the British trying to lock the place down. I was going to get dinner in Cambridge and maybe a little rest before I had to head back to Lexington."

"Sure. I'll see you there." She'd avoided replying to my statement, and we both knew it. But like Pam had said, she was a big girl and she had a job to do.

Only after I'd agreed to meet her did I realize that I was supposed to jump out before sunset, returning to my home now. But it wouldn't matter if I stayed a little longer since the jump back would cost the same. The Virtual City project wouldn't cover my expenses after the scheduled end of the job, but that would be pocket change if I just stayed one more night.

We parted ways just outside the inn. I wanted to kiss her good-bye, but with Pam disguised as a man again that probably would've attracted the wrong kind of attention in this here and now. Instead we shook hands, Pam repeated "Cambridge, at sunset, where the main road from Boston enters town," then she headed off to rent a horse while Jeannie popped up my map in my mind and I went to deploy bugs.

Boston felt different today, in that just-before-a-thunderstorm sort of way. I wondered if I was imagining it, but lots of locals were extra tense as if they sensed what I knew, that a decade of growing tension was about to burst and put history on a fundamentally different path. TIs were everywhere, giving me suspicious glances as I passed by. I recognized a few that I knew, dressed as soldiers or tradesmen or servants or ladies, all of them fully alert. We were inside the decisive events period, and those ready to try to change those events were already sparring with those trying to keep things unchanged, like unseen armies clashing beneath the surface of actions the locals were experiencing.

I covered the last street on my grid, my coat informed Jeannie that all of its bugs had been deployed, and I headed for the only ground path out of Boston. In this period the city was almost an is-

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land, connected to the mainland by a narrow stretch of land known as Boston neck. The British would be sealing off the neck tonight, but I should be early enough to get past them.

I managed to catch the local coach to Cambridge and reached the town well before sunset. Cambridge didn't have nearly as many TIs hidden among the populace, but once again I spotted one I knew. He meandered over to walk near me as I ambled down the road. "Business done or business to do?" he murmured to me.

"Done," I replied. "I'm supposed to jump out soon. You?"

"To do. I could use some help if you want to hang around a little longer. My employers pay really well."

"Thanks, but I'm meeting someone later."

His glance was skeptical. "I thought you were done."

"It's personal."

"A local?" He grinned. Some TIs loved the fact that they had the perfect opportunity to love them and leave them. "Has she got a friend?"

"It's personal," I repeated. "And I thought you were on a job."

"I'm free until just after sunset." He looked around casually. "If you're going to be anywhere around here after midnight be careful. It's not just the British regulars patrolling all over the place. There's TIs everywhere and most of them are armed and jumpy."

"Thanks for the warning. Take it easy yourself."

"Sure." He paused as we reached the place where Cambridge stopped and fields began. "This your spot? I'll see you around."

"Hopefully not anytime soon," I added. He winked and moved off.

Pam and her horse came trotting in while the sun was still a finger's width above the horizon. She nodded wearily to me. "Damn redcoats everywhere, but I've got the route scoped out."

"How long do you have?"

"I need to leave here by about nineteen hundred so I can move slowly and be ahead of the fuss around William Dawes when he comes through." Pam dismounted and led her horse and me back into Cambridge. "I'll have the horse taken care of while you and I spend some time."

"Nineteen hundred?" I should have known that there wouldn't be time for another romantic interlude. Not a physical one, at least. "You're going to eat, right?"

"Yeah. No flip tonight, though."

After Pam dropped her horse off at a stable for a rubdown and a nice bucket of molasses-soaked grain, we found a tavern and took a table in one corner. Between the background noise as the other diners discussed the rising level of tensions with British authorities and the haze of smoke from tobacco and the hearth fire, we had a pretty decent level of privacy as we dug into spit-roasted chicken. "I'm still worried," I finally stated.

"That's only allowed if you're serious about me," Pam replied, her eyes on mine.

"I'm serious." Now or never, Tom. Jump through time all you want, but the odds were vanishingly small that I'd ever encounter this moment again. "I'll go."

"Go?"

"Emigrate. I don't want to lose you. Now can I be worried?"

She smiled broadly. "Oh, I wish we weren't in public, so I could kiss you. Yeah, worry away. But it's okay. I've got the British patrols mapped out, I've spied on the activity of TIs planning Interventions and Counters around Lexington, so I should be able to avoid any that might take me out on general principles, and Annie can tell me if any TIs get too close despite that." Pam saw my expression. "Hey, any man of mine has to avoid overprotectiveness."

"Understood." I exhaled and shrugged. "I know you're good. You don't need me holding your hand. Okay.

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How do we handle the emigration?"

"Here." She paused.

I'm receiving a certified sponsor affidavit from Pam's Assistant Annie, Jeannie informed me. *It conforms to authentication requirements for our home now.*

I gave Pam a look. "You had it ready?"

"I had confidence in you. Besides, there's not much chance we'll connect here after my job's done. You need to get out of here before *you* get hurt."

"I thought you said it was safe," I complained.

"Not for someone armed only with a single-shot tranq crystal," Pam pointed out. She smiled at me in a different way, then made a face. "Annie says I need to get going. Walk me to the stable."

It was plenty dark out now in that pre-industrial way that defines dark. She stopped short of the stable, in a patch of street very poorly illuminated, pulled me close, and kissed me hard. "I can't wait to see you in my home now."

"Pam? Did I ever meet anybody else in my own home now?"

She looked away, then back at me, meeting my eyes. "I didn't look. I didn't review your personal history at all, just the TI trip files. Because I didn't want to know."

And if I went uptime to be with her, I'd never know, either. Because Pam would have staged an Intervention in my future and her past, changing both. She had already changed my future, since I would have left this now already if not for wanting to meet her again. "That's okay. I wouldn't want to know either. If there ever would have been anyone else, she couldn't make me happier than you will."

Pam kissed me again, then broke contact abruptly. "See you in several centuries. When you emigrate uptime, Annie gave Jeannie directions on how to find me and exactly when to jump to. She also transferred all the credit I've got to you. Between us, we'll be able to afford your jump uptime even though we'll be paying it off for a long time."

Pam seemed to have thought of everything. As I stood in the shadows and watched her mount up and ride out of Cambridge toward Lexington, I hoped she really had thought of everything.

Eventually I moved, knowing I should go ahead and jump back uptime. But some instinct made me fade into more shadows and watch the road that Pam had vanished down. I was still there when another figure led a horse out of a nearby stable, distinctly looked toward the place where Pam had left me and then down the road she'd taken, then mounted up and galloped after her.

I knew that man. Jeannie never forgets a detailed silhouette and she sees really well at night anyway. It was the aristocratic Brit who'd confronted me in Boston. And every indication was that he'd somehow followed me without my spotting him or Jeannie picking up his proximity, that he'd decided Pam was one of my 'hooligans,' and he was now after Pam.

I wouldn't be jumping uptime. I headed for a stable, hoping a horse would be available without too much delay and realizing I was about to charge down a road populated by edgy British military patrols and who knew how many trigger-happy TIs.

I made it over Alewife Brook, then through the crossroads at the place that would someday be Arlington but was now Menotomy at about twenty-two thirty, narrowly avoiding a patrol of British regulars. Paul Revere and William Dawes would be leaving Boston now to warn everyone that the main body of the British regulars was coming out. I was about even with Pierce's Hill at twenty-three hundred, when I knew the British expedition was departing Boston.

Jeannie's warning came a fraction of a second too late. Something clipped my left side, paralyzing it. My horse screamed with fright and bolted to the

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right while I failed to keep my saddle with half my body not working and kept going left. I hit the road with the half of me that could feel it, naturally, then lay there trying to breathe.

A pair of boots came within my field of vision. "Game over, mate."

"I'm not playing," I managed to gasp, wondering who this TI was working for.

"Not anymore." Everything went dark.

I woke up with a raging post-stun headache. *Time?*

Twenty-three thirty, Jeannie answered promptly.

I'd only been out for half an hour?

It was an older model stun system, Jeannie continued. *I managed to nullify some of the effect. The TI responsible was himself ambushed as he lurked near us and was taken off by three other TIs.*

It had started then, but I was stuck on the road without a horse and still a long ways from Lexington. I managed to get to my feet, staggering from the lingering effects of the stun weapon, and wavered back toward the road. As I did, I heard a horse galloping my way. If I could stop that guy and get his horse—

I would advise against leaving cover at this time, Jeannie insisted. *If my estimates are correct, all hell is about to break loose.*

When Jeannie's right, she's right. Given the time of night, I realized that the man I was hearing might well be William Dawes, Paul Revere's southern route counterpart. If he was . . . I hit the ground and tried to be invisible.

Judging from what happened next, it was Dawes.

Jeannie alerted me to energy discharges and jumpers arriving down the road where the hoof beats sounded, everything coming closer fast. I spotted a man on a horse thundering down the road, just about the time a figure in a stealth suit rose up less than a hundred meters away from me in the direction of the rider. The TI would be invisible to any local, but Jeannie could pinpoint him or her for me.

The stealth-suited TI leveled a weapon, then dropped as a stun charge hit. Moments later the other TI who'd fired the stun charge fell, then two more TIs appeared and took out whoever had nailed the second TI. But then the stealth-suited TI reappeared, having recovered somewhen in the future and jumped back to try to finish the job. One of the last set of TIs fell, then the remaining one grappled with the first TI and knocked them both down.

Dawes rode past the battle scene, and as he drew even with me, two more TIs appeared on the opposite of the road from me, weapons drawn. What looked like half a dozen more TIs materialized around them as the air filled with energy discharges. Another TI jumped into view just beyond the ring of six TIs, but instead of firing at Dawes aimed across the road and sent a blast into the bushes entirely too close to me. A body flopped to the ground near me, then another figure appeared, took a weapon from it, then was itself grappled by another person.

And so it went. Interventions. Counter-Interventions. Counter-Counter-Interventions. Etcetera. I kept my head down, watching as William Dawes rode up the road toward Lexington oblivious to the silent, stealthy running battle raging alongside him every step of the way as some TIs tried to stop him and others tried to ensure he made it. I found myself wondering if Dawes had made it originally, or if Paul Revere had, or if those defending them were actually the ones doing the Interventions to change history. The original truth, if such a thing had ever existed, had long since been lost in the web of interferences by time travelers.

People used to think, and many people still do think, that causality is linear through time. Cause has to precede effect. But the truth is that causality forms

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a circle through time, where cause may be hard to identify but may occur apparently after effect. Sometimes what you think is the cause turns out to be the effect. The old time-travel paradoxes weren't real because they didn't recognize that, but we couldn't learn it until we were able to travel through time and start identifying all of the deliberate and accidental Interventions going on. The more we learn about that, the more we see how tangled and interwoven the circles of cause and effect and cause are, the more people wonder if there ever was a base reality, because history as we know it already reflects countless changes from what might have been.

But for tonight, I just needed to get to Lexington and ensure whatever changes took place didn't include anything bad happening to Pam. I started walking. Midnight. Revere should be in Lexington now, if he hadn't been stopped. Dawes would get there about zero zero thirty, then they'd leave for Concord with some other guy. Well behind me, the British regulars had disembarked at Lechmere Point and were marching toward me. I had a good lead on them, but I'd need every extra moment, since I couldn't just walk into Lexington along the main road the British soldiers would use. There'd be way too many locals and TIs posted along that route.

When the road bent up toward Lexington I followed it until another road cut off to the left. It would take me south of the town, where another road would lead me straight up into Lexington along a route that shouldn't be nearly as hazardous. I was pretty sure it would be the same route Pam had taken. And the Brit following her. They were likely both still on horseback, with substantial leads on me. I walked faster.

There seemed to be locals everywhere as I approached Lexington from the south, but they weren't hard to avoid. The Colonials wanted to force a confrontation with the British troops, so they were standing out in the open or walking into town. I merged with them when I could, blending in. Most had muskets of varying age, but I wasn't the only one not carrying a weapon, so I didn't stand out on that account. The older men were serious and grim, the younger ones hopped up with excitement and joking with each other. Funny how it's always that way. I remembered the Roman teenage conscripts laughing and fooling around before Cannae.

Being a TI can be damned depressing sometimes.

When I got close to the town it was still long enough before dawn that the gloom made it easy for me to fade off to the side so I could approach cautiously from overland. As it got light enough to see faces well, suspicious locals might detain me as a spy for the British authorities since no one here would know me. Unfortunately, I had no idea where Pam was planning on deploying her gear. Jeannie could tell me where bugs had been placed in Lexington before my particular job, though, so I could guess what spots had been judged in need of better coverage.

There were so many TIs around that Jeannie kept calling warnings and I stopped paying close enough attention. Mistake.

"Hold it." The voice was very soft but very clear. I froze obediently, then turned my head enough to see someone step slightly out of cover, a weapon in one hand pointed straight at me. "Tom? What the hell are you doing here?"

It was the same TI who I'd met in Cambridge yesterday afternoon. "I've got to help somebody."

His weapon didn't move. "You told me you were done working here and now."

"I am. This is personal. She needs my help."

He shook his head. "Tom, you can't get that involved with locals. You know that. Whoever she is was dead and dust before your ancestors were born."

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"She's not a local!"

"Another TI? You dog. I never would have guessed. But I can't let you stage an Intervention or help some other TI do it."

I unfroze enough to make a pleading gesture. "She's not here and now for an Intervention. Just data collection. I swear it. The guy who's after her is planning an Intervention."

"Who is this guy?"

"I don't know. Some Brit. Looks like his family has been interbreeding with horses for generations. You know the type."

My acquaintance grinned. "Old line nobility? Yeah. I didn't see anybody like him on this route, but I didn't get here until after I'd helped make sure William Dawes made it through."

"This Brit left Cambridge on horseback early in the evening, so he probably got through here before you got in place."

"Probably," the other TI agreed. "And you want to stop him?" I nodded. "You're sure he's planning an Intervention?" I nodded again. He raised his weapon and stepped back slightly. "Then right here and now we're working for the same side. Go ahead."

"Thanks," I gasped in relief, but he stopped me from running on ahead with a gesture.

"It's dangerous going into that town right now, Tom. Is this babe worth it?"

"Yeah."

"I wish I'd met her before you did. Good luck." He faded back into cover, and I headed the rest of the way into Lexington as cautiously as I could. It felt like I was in one of those training simulations where enemies are on all sides waiting to pop out. Once among the buildings of the small town of Lexington, I couldn't sneak from place to place, so I walked, trying to look nonthreatening.

I came around a corner, and even though the sun wasn't up yet I recognized Pam. She was maybe fifteen meters away, her back to me, walking very slowly down one side of the street next to the houses there. I recognized her movements as being those of someone listening to her Assistant on where to go to deploy sensors.

But she was, clearly, fine. I'd run a lot of risks and made a fool of myself for nothing. The best thing to do now was to jump out of here before Pam saw me.

Pam suddenly staggered, then went down limp. The door to the home she'd been passing opened and a man stepped partly out to grab her arms and pull her inside. He was wearing a different outfit, the uniform of a British regular officer I thought from the brief glimpse I'd caught, but I didn't need Jeannie's confirmation to tell me that he was the Brit I'd seen before. How he'd manage to surprise Pam when her Assistant should have warned her that he was nearby I didn't know, but that didn't matter. I was already running across those fifteen meters toward the small house into which the Brit had pulled Pam.

I reached the door without anyone else shooting me and paused just outside. The house was small and old, built of roughly hewn planks sealed with plaster, not much more than a box maybe four meters by three meters in length and width, the edge of the roof just above my head. *How close is he?* I asked Jeannie, knowing she could detect the Brit's implanted equipment if he was near enough.

I can't sense any trace of him, Jeannie assured me. *At our last encounter I spotted his presence at a range of six meters.*

That house was smaller than that. He must have pulled Pam inside and run. Relieved, I barreled through the door.

And found myself looking at the Brit standing over Pam, a dazer stun pistol in one hand pointed directly at me. "Don't move," he ordered. "Close the door."

I considered pointing out that I couldn't follow both orders, but decided that it wasn't worth playing games

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with a guy pointing a weapon at me and with Pam helpless. Nothing in the house seemed like it would be of much help. A single chair and a narrow bed against the side walls, and a Franklin stove, its open side facing me from where the black iron box sat within the old stone fireplace against the back wall, a tin pipe running straight up from it and through the roof. *Why didn't you detect that he was here?* I mentally yelled at Jeannie.

It's strange to hear an Assistant sounding shocked. *He's shut down his systems. His Assistant and his jump mech.*

You should've been able to spot them in standby!

They're not in standby. They're completely shut down. I don't know of any way he could restart them in this now.

All of this had taken perhaps two seconds. I stared at the Brit, wondering why anyone would permanently disable their ability to get back to their home now, then at his weapon. But at least that explained how he'd surprised Pam. Her Assistant wouldn't have spotted him either. *Can that pistol deliver a lethal charge?* I asked Jeannie as I closed the door, moving slowly and carefully.

Insufficient data. Models sold were set to prohibit lethal charges, but were easily modified to allow a lethal nerve overload. That's why dazers were outlawed sixty years prior to our home now.

The Brit looked way too much like someone who'd make that kind of modification, so I spoke in what I hoped was a calming voice. "I'm just here to help her. Neither of us wants anything to do with you."

"Lies!" His face twitched but the weapon remained fixed on my midsection. "I was about to finish her off when you showed up. You want to stop me!"

"Citizen, I don't even know what you want to do."

"More lies. As if you didn't know about this!" The Brit's free hand pulled open his uniform coat as I realized he looked a lot bulkier than the last time I'd encountered him. The reason for that became obvious as the coat pulled open to reveal a vest loaded with lots of blocks of something that looked dangerously familiar.

What is that stuff?

Plastic explosive, Jeannie replied.

"You're going to take out the Colonial militia?" I asked.

"Of course not," the Brit answered contemptuously. "If your little rebellion is to be crushed it must be met with overwhelming force and righteous retaliation. Boston doesn't need to be occupied, it needs to be flattened as an example to any Colonials who support rebellion." He gestured toward the outside with his free hand. "A battle is one thing. It will arouse outrage in England, but not enough. No, that requires the belief that the Colonials murdered large numbers of our soldiers with a cowardly trick!"

His intent suddenly came clear. "You're going to mingle with the British regulars and then detonate that vest?" No wonder he'd been willing to shut down his systems. He didn't intend going home.

"Yes! Everyone will think the Colonials concealed some explosives in the road and detonated them without warning! Even Parliament will call for Boston to be dismantled brick by brick as an appropriate response to such a barbaric attack." He seemed enormously pleased with himself for a man who was about to commit suicide.

"But you're British, too. You'll be killing your own soldiers."

"So?" He made a dismissive gesture. "They agreed to die for the crown."

"And you're willing to do that, too?" I asked, not bothering to hide my revulsion at his attitude. "Then why isn't there a detonator wired into that vest?"

The Brit smiled unpleasantly and pulled a detonator out of one pocket. "No sense risking an accidental premature explosion. Once I finish you off, I'll

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set this in place, then go to join the British soldiers on their way here."

His hand with the stun pistol still remained steady on me, making a grab for it hopeless. But I knew he'd expect me to go for the dazer, not realizing that what I needed to get was the detonator.

I feinted toward the Brit's gun hand, then lunged back for the hand holding out the detonator. He reacted to protect the gun, turning that side away and firing at where I should have been. As the charge tore by close enough to numb my side under my arm, I closed one hand on the detonator and swung my other fist in a low hook. I couldn't waste a blow on the Brit's torso since it was well cushioned by all that plastic explosive, but his vest didn't go too far below his belt line. My fist hit his groin as the Brit tried to line up another shot at me. He squealed and his hands went limp, the detonator coming free in my left hand as I brought up my right and slapped the dazer away.

The Brit went to his knees and the dazer skidded into the corner. The detonator flipped up out of my grip and spun twice before I frantically caught it in midair and stepped back.

A lightening of the sky outside vaguely seen through a single window revealed that dawn was well under way. I heard commands being shouted in a way that called to mind disciplined military forces. The British regulars, deploying into line of battle at Lexington Green.

The Brit heard it, too. Delaying to attack Pam and then me had thrown off his schedule more than he realized, since he hadn't had his Assistant working to remind him of the time line. "Give me that detonator," he half threatened, half pleaded as he got his feet back under him.

"No. I don't particularly like people who are willing to murder other people on their own side in the name of some higher cause."

The Brit's eyes flicked from side to side, seeking some advantage.

I heard more shouts outside. It sounded like someone making demands and someone else answering, though I couldn't make out the words.

Pam groaned and raised her head, and my eyes and attention focused on her anxiously.

The Brit sprang. He barreled into me full force, grabbing for the detonator. I went backwards, his hand hit my wrist, and I lost my grip. The detonator flew backwards into the open front of the iron Franklin stove, hit the back wall of it, and did what detonators do when subjected to a shock like that.

The explosion wasn't very big, but the stove magnified the sound. The Brit stumbled to a halt and stared at the stove. "What have you done?" he shrieked.

"Saved some of your countrymen." The explosive vest completely covered his torso, so I stuck my finger against his neck and pumped the tranq crystal into him. He stiffened, then dropped limply. Tempted as I was to let him slam full force onto the floor, I have a policy of not letting high explosives slam into things if I can help it, so I caught the Brit and lowered him to the floor, vaguely aware of the sounds of more explosions echoing outside.

That's when I spotted Pam again. She'd gotten to her feet against one wall, her eyes on me and her expression shocked. "What did you do?" she gasped.

"Why is everybody asking me that?" The explosions somewhere outside were rising in crescendo. "What happened?"

Pam looked from me to the stove. "You're hearing the Colonial militia and the British regulars exchanging fire on Lexington Green. The American Revolutionary War has started."

No wonder she was upset. "And because of this guy you weren't able to deploy your gear to help find who fired that first shot."

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Pam gave me a look like she doubted my sanity. "Are you kidding? You haven't figured it out? You fired the first shot. You're the shooter."

"That's ridiculous. I—" It hit me then, and I pivoted to look at the stove. The detonator had exploded inside it. The metal box had magnified the sound, much of which had vented into this room, but plenty had gone up the metal tube that formed the chimney. Metal tube. Explosion at one end. The noise on the other end would sound like a gunshot. "I don't even carry a gun and I'm the shooter."

Pam shook her head in amazement. "No wonder no one could localize the shot to any possible location! The noise vented upward through the chimney and got deflected to all sides by the rain baffle on top! And no one could identify the weapon because it was an anachronistic detonator 'fired' through a chimney 'barrel.' But why did you do it?"

"What do you mean why did I do it?" I demanded. "The Brit here was about to kill you. I had to stop that, which meant I had to stop him."

"You started a war to save me?" Pam didn't seem certain how she should feel about that. "Tom, that's so very gallant. Also so very stupid, but gallant."

"I didn't do it on purpose!"

Pam came away from the wall, rubbing her forehead and grimacing. "So the shot that started the American Revolution was an accidental explosion caused because a time traveler here and now to document the American Revolution was trying to rescue another time traveler, who was here and now to find out who fired the shot, from a third time traveler who was here and now to change the events of the day but in the process made them happen the way they historically did. This is the sort of thing that makes people really upset with TIs, you know."

"It's not my fault causality is circular through time," I grumbled, retrieving the Brit's dazer. "If I caused the shot, how come nobody discovered me doing it before this?"

"Because even though you did it you hadn't done it yet!"

"And I wouldn't have if I hadn't been following you!"

Pam stared at me again. "Which you wouldn't have been if I hadn't come here and now to see you."

I was getting dizzy. "Which you wouldn't have done if we weren't going to meet in London about a hundred and thirty years from now. Which wouldn't have happened unless other people had tried to alter the outcome of a war that was decided by the future United States. I've always known how complex it all is, time filled with countless causality wheels interacting and blending and interfering, but where the hell did this one start?"

"There isn't any beginning and there isn't any end. You know that. So did the ancients. That's why the symbol for infinity grew out of the worm Ouroboros swallowing its own tail." Pam sighed. "But my job here is a success. I've learned where the shot came from and why."

"But no one knew that before you came here. Why don't I tell anyone? Aside from embarrassment, I mean."

Pam smiled. "I guess you're not in your home now to tell anyone."

"Why wouldn't—? Oh. I guess this means I *have* to emigrate to your now."

Her smile went away and her eyes narrowed dangerously. "*Have* to? Is that how you see it?"

From the way Pam was looking at me, if I didn't think fast the first day of the American Revolution might see another casualty. I raised my hand to my head and feigned confusion. "Did I say something that didn't make sense? That guy hit me pretty hard, and I'm still really rattled—"

"Your Assistant told my Assistant that you're fine. No concussion."

Traitor, I told Jeannie. "It's probably something she can't detect. I'm sure the

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medical tech in your now can handle it. I'm really happy to be going there to be with you. Did I mention that?"

"Uh huh. Sure."

"Hey, I started a war because I love you! Doesn't that count?"

"Next time just give me chocolate," Pam advised. "What do we do with this guy? Send him home?"

"We can't. He's shut down his jump mechanism."

"Yeah, we can," Pam announced. "Annie can transmit enough power to reactivate his power source, then his own power source can trigger his jump mech. Once Jeannie gets her upgrade in my now she'll be able to do that, too. I'll have Annie reset his jump so he comes out fifty years uptime from his home now. He'll have a real hard time explaining his presence there and trying to get back to his home now." Pam held still for a moment, then the Brit's body popped out of existence. "What was that he was wearing?"

"Explosive vest."

"Ugh. One of them. He's going to get a real unpleasant reception when I sent him." Pam looked toward the outside, alarm showing. "There's TIs all over the place out there and some of them are getting closer. Let's get the hell out of Dodge."

"Will you be there too?" I asked.

"Dodge City? Yeah, 1878."

"I'll be there in 1879!"

"Late! Just like a man. Now let's jump back to our own home nows before someone else we don't want to meet catches us here!"

But I waited until Pam vanished, then triggered my own jump.

Which is how I found myself filling out the forms for emigration uptime, accompanied by the sponsor's affidavit from Pam, and saying good-bye to everyone I knew in what would soon be my former home now. The guys I knew all told me I was nuts to be leaving my home now for a girl, and the girls I knew all cried and told me what a great guy I was. They all chipped in a little to help pay for the jump in lieu of presents for a wedding that wouldn't happen for another century.

I didn't tell anyone I started the American Revolution by accident. That secret is safe for another century. ■

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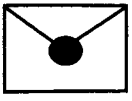

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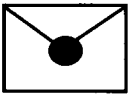

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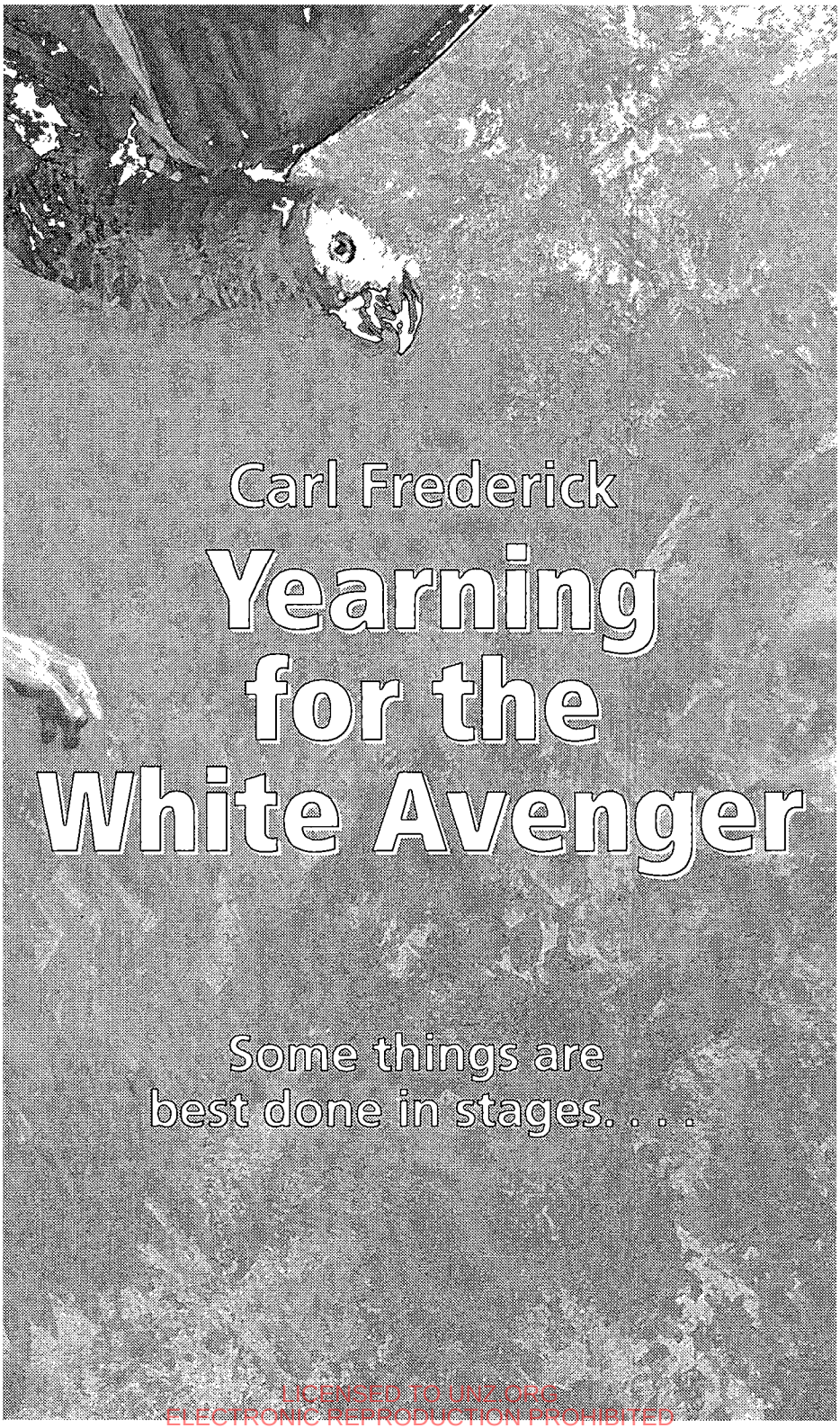

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"You don't like Brussels sprouts," said the parrot.

Conradin gazed over at the perch in surprise, and also embarrassment. For the first time, he'd been invited to dinner by his best friend, Henry, and he wanted to make a good impression.

Henry laughed. "Mom trained her to say that." He seemed pleased with himself. "Because of *me.*"

Mrs. Wolverton smiled. "It's all right, Conradin," she said. "Most eleven-year-old boys aren't nuts about Brussels sprouts." She threw a glance at her son. "Henry certainly isn't."

Conradin balled a fist with the hand on his lap. "But how—"

"I saw what you did," said the parrot.

"What?" Conradin felt his face flush with guilt; when Mrs. Wolverton had gone out to bring in the dessert, he'd slid a Brussels sprout back into the serving bowl. And now the parrot was telling on him.

"You must have made a fist," said Mrs. Wolverton. "Shadow's trained to say that when she sees someone making a fist."

Conradin stared at her and wrinkled his nose in puzzlement.

"It was for a crime show."

"Oh," said Conradin, still mystified.

"Mom trains animals for TV." Henry wiggled a finger at Shadow. "African Grey parrots are smart."

"I didn't think they were *that* smart." Conradin nodded over at the dog watching alertly from just outside the no-begging zone: a black and white Border collie with half-perked ears and dark brown eyes. "Anyway, I thought dogs were smarter than birds."

"They are. Watch this!" Henry slid his chair back a few inches, then turned toward the dog. "Sniffles," he said, "do you want some people food?"

Sniffles, whining, made twitching motions. In spite of the dog's lack of speech, Conradin had no difficulty understanding him.

"Then bring over your bowl."

Sniffles ran out of the dining room and a few seconds later, returned with a dog bowl in his teeth. He paused at the no-begging boundary and, after Henry nodded, raced up to the table. Henry put some lamb chop scraps in the bowl and told Sniffles to eat it in the kitchen. Sniffles, with the bowl in his teeth, dashed out of the dining room.

"Geez!" said Conradin.

"Where is Sniffles going?" said the parrot.

"Wow!" said Conradin. "These guys are smart as people."

Mrs. Wolverton put down her fork. "It's body language, mostly. Dogs and birds are sharp observers. We can train them so they seem very intelligent."

"But Sniffles and Shadow *are* intelligent," said Henry, glancing at the parrot. "African Greys are Einstein parrots and some Border Collies can understand over four hundred words. They can't talk, but they're super intelligent."

"Oh, I wouldn't go that far," said Mrs. Wolverton. "Intelligence is a word covering many meanings. There really should be a lot of different words." She regarded the parrot. "But whether Shadow knows what she's saying—probably not, but who knows?"

Just then, Sniffles padded back in.

"Good dog," said Henry. "You can come up to the table now."

Sniffles, tail wagging, darted up between Conradin and Henry. Conradin leaned over and patted the dog, closing his eyes when Sniffles licked his face.

"You really like dogs," said Mrs. Wolverton.

"I love dogs." Conradin chuckled. "How could you tell?"

"Body language." She gave a warm, inclusive smile. "Maybe you can work on your father to get you a dog."

"I've tried. He doesn't want a dog around. Most of the time, he doesn't even want me around."

"Oh, don't say that."

Conradin cast his eyes down at his Brussels sprouts.

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* * *

In Henry's room after dinner, Conradin pretended he was getting a dog. Prone on the floor with Sniffles between them, he and Henry leafed through a breed book. They started at Affenpinscher and had gotten most of the way through the letter K when Conradin stopped at a picture of a great white dog with thick unkempt fur, flop ears, and dark, intelligent eyes.

"He's beautiful," said Conradin. "Kuvasz, it says. A livestock protection dog."

Henry leaned in to read the page. "Hey, look at this." He pointed at the text. "The Kuvasz is so protective that parents can't even scold their kids when the dog's around."

"That's a *really* good dog," said Conradin.

Sniffles gave a low woof.

Henry brushed his cheek against Sniffles' muzzle. "You're an even better dog." He patted the dog between the ears. "He doesn't herd sheep like you do, he only guards them."

"Wow!" said Conradin, still engrossed in the book. "This dog weighs more than both of us together." He slammed the volume closed and sprang to his feet. "This is my dog." He turned to Henry, who had rolled over on his back. "Could you do me a favor? Could you go onto the net and find a picture of a Kuvasz and print it for me?"

"Sure." Henry scrambled to his feet and went to the computer.

Conradin, standing behind as Henry worked the keys, envisioned the dog, his dog. The White Avenger! That's what he'd name it. He imagined himself at home, sleeping, snuggled up to his dog, safe.

"How about this one?" said Henry, looking back over his shoulder.

"Great!" Conradin stared at the image on the screen: a great, proud, and confident dog standing in a heroic pose on a green meadow with a flock of sheep in the distance. "He's terrific."

"Protection from the bullies," said Henry, as he sent the image to the color printer.

"Yeah, the bullies."

Without turning around, Henry asked, "Is your dad still hitting you?"

Conradin didn't answer.

After a moment, Henry swiveled the chair to face his friend. "Well, does he?"

"He says I deserve it." Conradin looked down at his feet. "And I think maybe I do."

"That's crazy. No kid deserves to be beaten up all the time."

"Yeah. You just try telling that to him."

"Well, *I* think I should tell my mom."

"No!" Conradin couldn't bear the thought of his shame being exposed. "It's a secret."

"Why?"

"It just is. Promise not to tell." Conradin's eyes began to go moist. "Please."

"Okay, okay."

"Swear it."

"All right." Henry yanked the image from the printer. "I swear it. Here's your dog."

Conradin took the sheet as if it were a holy relic. *The White Avenger.*

There was a knock at the door. "Milk and cookies," came Mrs. Wolverton's voice.

Henry opened the door and took the tray. "Thanks, Mom."

Conradin saw two glasses of milk, a dish of chocolate chip cookies, and a few loose dog treats.

"Your mom's neat," said Conradin when the door had closed.

"Yeah." Henry set down the tray and dangled a dog treat in front of Sniffles. "Sniff. Want a snack?"

Sniffles, his eyes locked on the treat, made a singing *rowf* sound. Again, there was no mistaking the body language. Henry tossed the snack, and Sniffles caught it on the fly.

"Hey," said Conradin, his eyes on Sniffles. "I've just gotten a really screwy idea."

Henry gazed at him quizzically.

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Conradin laughed. "You didn't need to answer," he said. "Your body language answered for you. That's my idea."

"O-kay."

"Border Collies are smart," said Conradin. "Right?"

"Yeah," said Henry, cautiously.

"And they can understand about four hundred words."

"I think Sniffles can."

"And," said Conradin, with the air of a trial lawyer making a telling argument, "Sniffles can talk back using body language."

"Yeah. In a way."

"And your mom trained Shadow to understand body language and to say what she understands."

"Yeah, so?" said Henry with obvious impatience. "Just tell me your idea."

"Okay, listen," said Conradin, excitedly. "Why can't we train Shadow to understand Sniffles' body language?" He didn't wait for an answer. "Then we could talk to Sniffles, Sniffles would answer in body language, and Shadow would translate it to words. We'd have a talking dog!"

Henry cocked his head at an angle and gazed at his friend.

"Well?" said Conradin after a few moments.

"Yeah, it's a screwy idea, all right." Henry put his hands on his head and interlocked his fingers. He laughed. "But I like it."

"Do you think we can get your mother to teach us how to train Shadow?"

"She's already taught me." Henry raised his arms like a prizefighter declaring victory. "And when Dad comes home, maybe we can really surprise him." He headed for the door. "He'll be away for almost a week."

"I wish I were that lucky," said Conradin under his breath.

"Come on," said Henry from the doorway. "Let's get Shadow. And we'll need some parrot crackers—and some more dog treats."

* * *

After a few hours, they had gotten nowhere; *they* could understand when Sniffles said, "let's play," or "I like you," or "may I have a dog snack," but Shadow refused to translate.

Henry threw himself down on his bed and gazed at the ceiling. "This isn't going to work. I'd forgotten how hard my Mom works to get Shadow to say new stuff."

Conradin glared gloomily at the parrot.

"Hey," said Henry after a few seconds. "I've got an idea." He rolled to his feet. "Shadow already can say lots of stuff." He darted to his computer and pulled up a document. "This is what Mom calls her Shadow Phrasebook."

Conradin looked over Henry's shoulder at the screen showing rows of phrases, each followed by a hand gesture, or sometimes gestures with both hands. Finger positions were emphasized with dark shadings.

"Here, watch this." Henry first pointed to one of the entries, then turned toward Shadow and executed the gesture.

"You are a bad man," said Shadow.

Conradin giggled.

"When we see Sniffles doing something we understand," said Henry, "we can make the hand signals from the book and Shadow will say what Sniffles means. After a while, we can stop using the hand signals."

"You think?"

"Yeah. African Greys are smart." Henry pressed a few keys and pages began spewing out of the printer. "You'll have to learn the signals too. Mom prints copies and give them to the actors." He gathered together the pages and handed them to Conradin.

Conradin studied an entry and made the hand gesture. But Shadow didn't say anything.

"It's this little squiggle here." Henry pointed to the page. "After you make the hand position, you have to curl your little finger. It takes a little getting used to."

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Conradin tried it and after the third attempt, Shadow said, "Anybody home?"

"You got it!" said Henry.

Just then, Mrs. Wolverton's voice echoed up the stairs. "It's getting late. It's time for Conradin to go home now."

Henry opened the door and called down, "Mom. Does he have to? It's Friday. There's no school tomorrow."

"Yes, he has to. He does have a home, doesn't he?"

"But, Mom . . ."

"Do you need me to come up and discuss the situation?"

"No." Henry closed the door.

After they'd arranged to continue the training tomorrow, Conradin put the Kuvasz picture in the front of his school notebook, slipped the phrasebook into his pack, and made ready to leave.

Downstairs, he thanked Mrs. Wolverton for dinner, hoisted his school pack to his shoulders, and trudged to the door. It was hard leaving the friendly household. He felt more at home there than at his own house.

As he stepped outside, the darkness surprised him. He'd not realized it was this late. Setting off at a jog, he hoped that when he got home, his father wouldn't make an issue of it. Conradin scrunched his shoulders. It didn't take much to trigger his father's rage—especially if he'd been drinking.

To save some time, he took the forbidden shortcut along the cliff edge. There, a grass-covered plateau, featureless save for a lone pin oak, ended abruptly at a three-hundred-foot drop. There was neither signboard nor guard rail to warn the unwary. At the base of the precipice, a tumble of rocks and boulders gave way to a narrow beach and then to the ocean.

Conradin paused to catch his breath. He felt an excitement being there, not only because it was out of bounds, but also because it was the one place he felt close to his mother. They'd often picnicked there—sitting with their backs against the oak, shaded by its leafy branches and whispering dreams as they gazed out over the infinite ocean. It had been their private place before she'd married again. That tree was sacred.

But six months ago, while he was at school, she had fallen off the edge and that changed his life out of all recognition. His new father used to be somewhat nice—except when he'd been drinking. And since Mom's death, he drank just about all the time. Conradin looked over at the oak tree, leafless now in the late fall, and then looked quickly away.

At the cliff edge, buffeted by the breeze off the ocean, Conradin managed to lose himself in the distant roar of the breakers crashing to the rocks below. He gazed up at the stars, finding the Southern Cross and then Canis Major, the "greater dog." The eye of the dog, Sirius, the brightest star in the sky, seemed like an old friend. He said its name aloud and then the names of the other bright stars in the constellation: Mirzam, Adhara, Wezen. Just saying the names gave him a feeling of power. Mentally, he traced out the familiar outline of the dog. Then he altered the outline, morphing it into the shape of his dream dog, a giant Kuvasz, his protector. He said its name aloud, "The White Avenger," then stared at Sirius, "and the All-seeing Eye of Vengeance."

Gazing at the constellation, he let himself become hypnotized by its power. Words came to his mind, a chant, an incantation. He spoke it to the sky.

"Please, White Avenger. Watch over me and protect me.

And let the All-seeing Eye of Vengeance strike down my enemies and hurt them bad."

As he prayed to his dream dog, he suddenly smelled corruption on the clean, cool air—the all too familiar stench of alcohol.

He spun around and reflexively raised his arms to protect his head—but not fast enough. His father grabbed him by

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the front of his shirt and backhanded him across the face. Conradin yelped.

"What do I have to do to get you to listen to me?" said the man, his voice low and angry. "I told you *never* to come here. This cliff is dangerous."

"Then what are *you* doing here?" As soon as he said the words, Conradin regretted them.

His father spun him around and bent him over. "I'll teach you to mouth off," he said as he began slapping the boy repeatedly on the bare skin just below the edge of his shorts. Conradin shrieked, both from the pain and also the certain knowledge that if he didn't, his father would just hit him harder.

Despite the pain, Conradin knew he'd been comparatively lucky; if this had happened at home, his father would have taken off his belt.

After a torrent of excruciating, staccato strokes, his father pulled him roughly to his feet. "Go home and go to your room," he said with menace in his voice. "And stay there."

Sniffling, Conradin darted away. Soon though, overcome with the physical and mental exhaustion that always followed a beating, he had to stop. Looking over his shoulder, he let out a breath of relief. His father wasn't following him and that meant he'd probably be able to make it to bed without getting another licking. He lifted his gaze to Sirius, the sparkling All-seeing Eye of Vengeance. And he made a wish on it—a dark wish, a fierce wish.

Next morning in Henry's room, the boys began to build their talking dog. They decided to start with the phrase "come and play." Henry already knew how to say it in dog; you get down on all fours and bounce up and down with stiff, straight arms. Henry demonstrated. Sniffles answered with the same movements. "All dogs know this," said Henry, from the floor. "Even wolves." He scrambled to his feet. "Okay. Here's what we do. You get on your knees and do 'come and play.' When Sniffles does it, I'll make the hand sign for Shadow."

"I can make the sign," said Conradin. "I memorized the phrasebook last night."

"Really? All of it?"

"Yeah."

"Well," said Henry. "I'd better make the signs. Shadow knows me better, and anyway, Mom taught me how to train her."

They tried it; when Sniffles bounced on stiff legs, Henry made the sign, holding his hand in front of the dog.

"Let's play," said Shadow.

They did it over and over. Henry made the sign with ever-smaller motions. And each time, Shadow said the phrase in squawky English. Then, Henry didn't make the sign, but just held his hand inertly in front of the dog. Again, Shadow uttered the phrase. Finally, with Henry standing out of the way, Conradin bounced "come and play." Yet again, Shadow said it in English.

"Hurray, we did it!" said Henry.

"I didn't think it would be this easy," said Conradin.

Henry bit his lip. "Me neither."

They moved on to "may I have a cookie." Shadow picked it right up, but the boys weren't sure if it was Sniffles "talking" or the parrot.

Then, in the midst of training "I like you," Henry turned on Conradin. "Hey, you're cheating. I saw your fingers twitch. You made the hand signal."

"No, I didn't," said Conradin, wounded that his best friend would accuse him of being a cheat.

"I saw you."

"I didn't. Scout's honor."

"I'll prove it," said Henry. "Put your hands in your pockets and I'll get Sniffles to say come and play."

"Okay," said Conradin. "You'll see." He stuffed his hands in his pockets and Henry dropped to all fours.

Sniffles "said" come and play, but Shadow stayed silent on her perch.

"See!" Henry got to his feet and glow-

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ered at his friend.

"I'm sorry. I didn't mean to. It was an accident."

"Accident," said Henry in a voice filled with disbelief and scorn.

"Really!" said Conradin. "I didn't know I was doing it. I stayed up late memorizing the phrasebook. I guess now I automatically make the hand sign whenever I hear the phrase."

"Geez! Now we'll have to start all over."

"I said I'm sorry."

"Okay, okay," said Henry, looking not at Conradin, but at Sniffles. "Let's go back to 'come and play'—but keep your hands in your pockets."

"I can't keep my hands in my pockets all week."

"Then chop them off." Henry balled a fist.

"I saw what you did," said Shadow.

It took most of the day, but finally Shadow got it; whenever they persuaded Sniffles to say come and play, Shadow said. "Let's play."

"That was a simple phrase," said Henry, his voice filled with discouragement despite their success. "I don't think we'll get Shadow to say more than five or six phrases—even if we work on it all week."

"You don't want to give up, do you?

"No!" said Henry.

By dinnertime—Conradin had been invited for dinner again—they'd made little if any more progress.

The boys tramped downstairs into the dining room.

"Conradin," said Mrs. Wolverton. "Why are you wearing mittens?"

"They're Henry's. I forgot I was wearing them."

Mrs. Wolverton looked as if she was about to say something. But she didn't.

On Sunday and after school on the days that followed, Conradin worked on the Sniffles project with Henry. Aside from when he was sleeping, he spent almost no time at home. That was a good thing as it lessened the chance of his falling victim to his father's temper. There was an incident on Thursday night, though—minor, just a sharp slap on the face.

Each night, as he walked home, Conradin gazed at the All-seeing Eye and renewed his angry wish.

On Friday, a school holiday, Conradin went early to the Wolvertons'. While he looked forward to another whole day there, his mood was tinged with sadness; Henry's father was due back that evening, which meant the Wolvertons would be complete again. The days of his being almost a part of the family would be over.

Conradin had pretended for the week that Mrs. Wolverton was his mother and Henry his brother. Actually, they *were* brothers of a sort; in a solemn ceremony months ago, they had used a pocketknife to become brothers in blood.

As Conradin jogged through the front door, Mrs. Wolverton looked up from her book. "Hello, Conradin." She frowned. "That bruise on your cheek. Have those school ruffians been picking on you again?"

Conradin hung his head.

Mrs. Wolverton stood. "Tell me their names. I'm going to phone the school and put an end to it." She shook her head. "It's a wonder your father hasn't done so," she said under her breath.

Conradin stood mute.

Meanwhile, Henry had padded down the stairs, stopping a few steps from the bottom. Conradin felt himself flush under his friend's accusatory gaze.

"I don't understand it," said Mrs. Wolverton, throwing up her hands. "This schoolboy code of silence of yours."

"I'm sorry," said Conradin in a small voice.

She looked at him for a few moments, smiled, then put an arm around him and gave him a hug. "It's all right, Conradin." She laughed, clearly trying to change the

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mood. "Henry says you've been spending so much time here this week, we should adopt you."

"Yeah," said Henry, leaning over the banister, "Sniffles already has." He chuckled. "He probably thinks you're a sheep."

"Could you?" said Conradin, looking at Mrs. Wolverton. "That would be great."

"Could I what?"

"Adopt me."

Mrs. Wolverton gave him a long look, her face tinged with puzzlement and concern.

Henry ran the rest of the way down the stairs and pulled Conradin away. "Come on," he said. "We don't have much time."

Conradin had eaten dinner at the Wolvertons' for the seven previous days, and those dinners were the high points of his existence. It was not so much the food—which was fine—but the warmth and the relaxed routine: everyone helping to set and clear the table, the pleases and thank yous as plates of food were passed, the dinner conversation, and his being treated as if he mattered.

Today's dinner was special—celebratory. Henry's father hadn't known exactly when he'd arrive and had asked that they not hold dinner. But still, a place setting was laid out for him.

As they sat around the table, just after Mrs. Wolverton had brought in dessert, the doorbell rang. Henry jumped up. "That must be Dad!"

Henry sprang toward the door, getting there just as it opened. "Hi, Dad!"

Mr. Wolverton stepped in. He threw his briefcase on the hall table, tousled Henry's hair, and strode briskly into the dining room. Conradin stood as he entered.

Mr. Wolverton exchanged hugs with his wife and his son.

Conradin, watching, felt a pang of envy and a sense of loss.

"And this is my best friend, Conradin," said Henry.

"Hi, Conradin," said Mr. Wolverton with a smile, motioning for the boys to sit. "Henry's talked a lot about you." He stared at the bruise. "Have you been in a fight?"

"Sort of, sir," said Conradin, shyly.

"It's terrible," said Mrs. Wolverton, pouring a cup of coffee for her husband. "He's bullied mercilessly at school—and out of school, too."

Just then, Sniffles padded in from the kitchen. Shadow fluttered in as well and alighted on her dining-room perch. Sniffles jumped up and pawed at Mr. Wolverton. "I like you," said the dog via Shadow. "May I have a cookie?" he added, exhausting almost half of the Sniffles/Shadow vocabulary.

"What?" Mr. Wolverton laughed. "What's going on here?"

"It was Conradin's idea," said Henry. "Shadow reads Sniffles' body language and translates it to speech. We've worked on it all week."

"Fantastic," said Mr. Wolverton. "What a great idea."

Conradin beamed.

"And it really works," said Henry. "We can actually talk to Sniffles now. A little bit, anyway."

Ignoring the no-begging zone, Sniffles came up to the table and sniffed at Mr. Wolverton's pants.

"May I have a cookie?"

"For gosh sakes," said Mr. Wolverton, a smile on his face, "won't someone give that dog a cookie?"

Henry fished a dog treat from his pocket and tossed it to the dog.

Seated around the dining room table, the Wolvertons were a family. Even though he was included in the conversation, Conradin couldn't help feeling like an outsider. It was even worse when they discussed their plans for Sunday: a family outing to visit Henry's maternal grandparents. Conradin felt like crying. He had no real family—no mother, no grandparents, or even aunts and uncles, just a mean drunken father. It wasn't fair.

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He started to clench his fists but he stopped in time—before drawing the attention of Shadow.

After dark but earlier than usual, Conradin said his goodbyes and started to leave. At the front door, Mrs. Wolverton stopped him.

"I'm worried about those bullies," she said.

"I'll be all right."

"Maybe," she said firmly. "But to be safe, I want you to take Sniffles with you. He'll protect you."

"It's okay, Mrs. Wolverton. I don't—"

"No arguments, young man." She called for Sniffles and the dog padded in. She bent to the dog and pointed to the door. "Sniffles. You go with Conradin. See that he's safe." Shadow flew in and perched on the hall table. "You'll have to take Shadow also." Mrs. Wolverton straightened to her full height and gazed down at him. "They're pretty much a pair now. When you get home, just send them back. Okay?"

Conradin smiled. "Okay." There was no arguing with Mrs. Wolverton.

Outside, as he walked diffidently toward home, he looked at the stars. "Please, White Avenger," he said. "Watch over me and protect me—and do just one thing for me."

Even though he was in no hurry, he took the shortcut by the cliff. Something drew him there. Maybe it was the closeness to his mother or maybe the solitude. And anyway, it was early. His father wouldn't be prowling about.

At the promontory, Conradin sent Sniffles and Shadow home. As much as he loved the Border Collie, it wasn't *his* dog. And he needed to be alone.

Again, he gazed at the stars. "Mom," he shouted at the sky. "It's not fair. It's just not fair."

Anger replacing sadness, he swiveled around and began to stalk toward home. He'd taken no more than a few steps when a motion caught his eye. Peering at the tree silhouetted against the star-pricked darkness, he saw a sitting figure turn away from gazing out over the dark ocean. The figure rose to his feet, and Conradin sucked in a breath as he recognized his father. They stared at each other for a moment. Then, in the eerie silence, Conradin watched his father rip free a slender rodlike branch from the tree—a smooth wand about as long as his arm. Conradin knew he was in for it, but he almost didn't care. He was boiling angry and stood rooted to the spot; his father had defiled the sacred tree.

Slowly, his father walked toward him—but without a stagger. Maybe he wasn't drunk this time. Maybe he could be reasoned with. But as he drew closer, Conradin smelled the telltale odor.

They stood glaring at each other for a moment. Then his father said in a surprisingly calm voice. "Lie on the ground."

"Why?" Conradin knew it was a silly question; he was just trying to forestall the inevitable.

"On the ground. Now!" his father commanded. "I'm going to teach you once and for all to listen to me when I tell you something."

"But—"

"Now!"

There was no sense in running away. He was trapped. Conradin complied.

"Roll over onto your stomach."

Conradin rolled prone, closed his eyes, and clenched his teeth. *Please, White Avenger. Watch over me and protect me.* He felt his father roughly pull down his shorts and felt a knee in his back. He heard the wand swishing through the air. A moment later, he threw back his head and screamed.

Stripped of his dignity, the supple branch began to strip him of his dreams. There was no White Avenger, no All-seeing Eye of Vengeance—just pain. And he was alone—just a powerless, disobedient kid. His shrieks alternated with sobs.

But after seven strokes, the cadence of the blows ceased and Conradin felt the knee draw away from the small of

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his back. He sucked in a sob and then he heard the growl. The pain from the last stroke took hold and Conradin felt his fingers twitch.

"You are a bad man," came a voice.

Conradin wiped his eyes and looked toward the sound—the tree. There, almost invisible on a limb, gray melding to black, he saw Shadow. And midway between the tree and his father, Sniffles crouched low, his teeth bared.

The man, wide-eyed, stared at the Border Collie. "This is nuts," he said. "I must be hallucinating."

Fur bristling, Sniffles inched forward. "You are a bad man."

Conradin's father took an unsteady step backward.

Feeling it was safe to do so now, Conradin pulled up his shorts. But he stayed lying on the ground as he'd been ordered.

Sniffles growled again and Conradin's father made a fist.

"I saw what you did," came the voice.

With a look of wide-eyed horror on his face, Conradin's father stared at the dog. "No. You couldn't have."

Sniffles glanced over at Conradin and then back at the man. "You are a bad man."

"This . . . This can't be happening," said the man.

Conradin, smiling through his pain, thought about his wish. But then, seeing that his wish might possibly be fulfilled, he had second thoughts. Maybe he'd deserved the whipping. Maybe he did need to learn to listen to his father. Maybe his father wasn't evil—or . . . or maybe he was. Conradin couldn't decide, but it was his concern for Sniffles that settled it; Sniffles was clean and pure, and Conradin didn't want to get him in trouble. "No!" Conradin shouted. He began to get up but as pain lanced through his tightened muscles, he fell back, prone. "No," he said again, but softly and with less conviction.

Sniffles seemed not to hear and continued inching forward.

The man threw a wild, accusatory glance at Conradin and then turned his attention back to the steadily advancing dog. He made a second fist.

"I saw what you did."

"It was an accident," said the man in a pleading tone. "Just an accident."

Conradin didn't quite understand what the man was talking about.

"She just fell," said the man, his eyes on the dog. "I didn't mean to do it." He took another step backward. "I was drinking. It wasn't my fault."

Conradin felt bewilderment and then comprehension made distant by denial and disbelief. He lowered his head to the ground, smelling the cool soil. His father, stepfather, couldn't have . . .

He heard Sniffles snarl and looked up.

His father, still holding the wand, waved it at the dog and then threw it at an angle over the edge of the cliff—inviting the dog to jump after it, to follow it into oblivion.

Conradin, aghast and frightened for the dog, held his breath and at the same time renewed his wish.

Sniffles ignored the stick and pressed slowly forward.

In a flash of understanding then, a vision came to Conradin of how his mother had really died. He screamed in horror.

His father favored him with a contemptuous glance. "It's your fault," he said. "We were arguing about *you.*"

"No! It's not true!" Conradin wiped his eyes, but he couldn't stanch his anguished tears. He buried his head in his hands.

A few seconds later, Conradin heard Sniffles' deep-throated growl, and then a loud, horrific cry from his father. Opening his eyes he saw, as if in slow motion, the man trying to regain his footing at the cliff's edge. His father, a dark blot against the stars, bent forward and his feet slipped from under him. He clawed at the dirt and gravel but could not check his fall. He screamed as he slid from view.

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Then, over the roar of the ocean, Conradin heard a muffled cry. "Conradin! Conradin, help me!"

Struggling to regain his sense of self, Conradin willed himself to ignore the pain and move. He crawled on hands and knees to the cliff edge and cautiously peered down. Sniffles, beside him, also looked over the edge. "You are a bad man," said the parrot.

Conradin's father, perched on a precipitously narrow ledge some twelve feet down, held desperately to a rotting tree root. He looked up. "Go for help," he shouted. "To the Wolvertons. Tell them to bring a rope."

To Conradin, it was remote—a bad dream, a nightmare.

"Now!" his father shouted, his face contorted in anger. "Damn it, Conradin. Move!"

Cowering from the voice, Conradin crawled backward, away from the edge. Then he stood and ran. At first he knew his mission: to get help. But as he raced through the dark, rugged countryside, his overwhelming desire was to escape the horror. He ran not toward a destination but away from an unbearable existence. He imagined his mother screaming to her death and his vision blurred with tears. Furiously, he ran, his body seeming to propel itself without his volition. He gasped from the exertion, and the gasps turned to sobs, and then to shrieks and wails. His memory receded; there was only now; he knew only of running in the darkness.

At the Wolvertons' house, Conradin pounded on the door, beating at the wood in mindless fury.

The door opened and there was Mrs. Wolverton and light and warmth radiating from the open doorway. Sobbing, Conradin threw himself at her and buried his head in her cardigan. Sniffles and Shadow jumped and fluttered, then disappeared inside.

"Conradin. What's wrong?'

Conradin held her, tightly, struggling for breath between the sobs.

She put an arm around him. "Was it the bullies?"

Conradin, his face against the wool, made no answer.

Mr. Wolverton came up with Henry and Sniffles following.

"He seems traumatized," said Mrs. Wolverton.

"What's the matter?" said Sniffles, jumping up and down. "What's the matter?"

"Henry," said Mr. Wolverton. "Could you put Shadow in her cage? I don't exactly need a talking dog right now."

Henry urged Shadow to the kitchen while Mrs. Wolverton guided Conradin toward the living room couch. Sniffles, now mute, watched with alert eyes as she sat the boy down.

Conradin, uncomprehending, rolled onto his side and curled up in a fetal position. Mrs. Wolverton tucked a cushion under his head.

"I wonder what's happened," said Mr. Wolverton, softly.

"I don't know. I feel so helpless. I don't know what to do."

They watched the boy in silence for a few moments. Then Mr. Wolverton said, "I'd better call his father. Do you have his number?"

"I have it," said Henry, coming in from the kitchen. He and his father went off to make the call, leaving Mrs. Wolverton alone with Conradin.

She pulled a chair up to the sofa and sat. "Can you talk about it?" she said, gently. Getting no response, she stroked the boy's hair—softly, as if he were a cat.

Mr. Wolverton and Henry returned. "No one home," said Henry.

"I'm worried," said Mr. Wolverton. "Maybe there's been an accident. His father, maybe." He nodded at Conradin. "Did you get anything out of him?"

"No. Nothing, I'm afraid."

"I'm not surprised, considering the state he's in. I don't think he *could* tell us anything." Mr. Wolverton sighed. "You know, I think I'll have Sniffles backtrack his scent. We'll find out where

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the boy's been."

"Can I come?" said Henry.

"No. You'd better stay here."

"But he's my best friend and—"

"It's almost your bedtime. I'd like you to go up and get into your pajamas."

"But, Dad, I want—"

"Go!"

"All right, all right."

As if from a great distance, Conradin heard footsteps tromping up a staircase and then felt a dog sniffing him, his dog, the White Avenger. A few moments later, he heard the house door open and close. In the quiet that followed, Conradin glided into a half-awake, half-asleep state. While images of his mother blended with those of Mrs. Wolverton, and the White Avenger with Sniffles, Conradin descended into a troubled sleep.

The sound of the door opening woke him. But, even though he didn't know where he was, he kept his eyes shut; he was afraid to open them. When Sniffles jumped on the couch and snuggled against him, he knew he was at the Wolvertons'. But he couldn't remember why.

"Any luck?" said Mrs. Wolverton in a whisper.

"No," said Mr. Wolverton, quietly. He glanced at Conradin. "Sniffles led me inland, almost to the main road, nowhere near the boy's house. And there was no sign of his father." He paused. "Ran into the constable. Told him what happened." Conradin heard the man sigh. "I'll take Sniffles out to the kitchen."

"No. Leave him. They look so sweet together."

Just then the phone rang, sounding loud and raucous against the quiet whispering.

Conradin heard Mr. Wolverton mutter "Damn," and then his footsteps as he rushed to the hall telephone.

Conradin felt his memory returning. Again, he felt the strokes of the oak wand and then, in his mind's eye, he saw his father on the ledge. Conradin inwardly winced; he'd really get it when he got home. He continued to feign sleep; if they knew he was awake, they might send him home right now. Conradin contemplated his beating to come and forced himself to go cold, detached, uncaring.

Opening his eyes just enough to perceive his surroundings through the filter of his eyelashes, he felt removed from reality. He saw his friend, pajama-clad and barefoot, pad down the stairs.

"What's going on?" said Henry.

His mother shushed him and pointed. "He's sleeping," she whispered. "And *you* should be in bed." Henry didn't move and his mother didn't make an issue of it.

A minute or so later, Mr. Wolverton walked with heavy step back into the living room. It didn't take a Shadow to interpret his body language.

"What's wrong?" said Mrs. Wolverton.

Mr. Wolverton turned to Henry. "I think you'd better go back up to bed."

"I want to know what happened." Henry spoke in a loud whisper.

Mr. Wolverton nodded, slowly. "All right. I guess you'd find out soon enough. And you have a right to know." Conradin snapped his eyes shut as Mr. Wolverton turned and looked his way. "It's good he's asleep."

"Please tell me what's happened," Henry insisted.

"Conradin's father is dead."

Mrs. Wolverton stifled a gasp.

"That was the constable on the phone." Mr. Wolverton stroked his forehead. "He said Conradin's father fell off the cliff. He had a tree branch clutched in his hand—from the ledge near the summit. Apparently, he'd checked his fall and balanced on the ledge for who knows how long, and then plunged to the rocks at the bottom."

"That's horrible," Mrs. Wolverton whispered.

Mr. Wolverton nodded. "Paul Whitten was night-fishing and heard a scream. It

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was he who found the . . ." Mr. Wolverton threw a glance at Conradin. "Paul phoned the constable."

"Do you think Conradin knows?" said Mrs. Wolverton. "Is that why he's in such a state?"

"About the plunge, no. I don't think so. Conradin would already have been here when it happened." Mr. Wolverton looked with a puzzled expression at Sniffles. "I might have saved him if Sniffles hadn't led me in the exact opposite direction."

"It is strange," said Mrs. Wolverton. "I've never known Sniffles' nose to lead you astray."

"I wonder," said Henry. "Maybe it was Sniffles and not his nose."

"What do you mean?" said his father.

Henry hung his head. "Nothing."

Mr. Wolverton shook his head in obvious frustration. "Let's hear the dog's story," he said. "Where's that parrot?"

"Don't be silly," said Mrs. Wolverton.

Conradin, falling momentarily back into his semidream state, mumbled, "Thank you."

"Did he say 'thank you?'" said Henry.

"It sounded like it," said Mrs. Wolverton. "The little angel. Polite, even in his dreams."

"I don't suppose," said Mr. Wolverton, "that we should wake him."

"No. We may as well let him sleep."

"Can we adopt him now?" said Henry.

"Well, aren't you the perfect little monster," said Mr. Wolverton in a distant yet strangely sympathetic voice. "Your best friend's father dies. I'd expect you to share his grief and not just toss aside his feelings for his dad."

Conradin, peeking again through almost closed eyes, could see that Henry wanted mightily to tell the secret. *It's okay to tell it now. It's a terrible secret. Telling it might make it go away.*

"I'm sorry, Dad," said Henry, his head cast down, "but I think Conradin would like it."

His dad nodded. "The constable told me they couldn't find any relatives—"

"He told me he doesn't have any," said Henry.

"And," Mr. Wolverton went on, "I did tell the constable we'd look after him."

"I rather like the idea," said Mrs. Wolverton. "I'd hate to see the boy whisked off to some institution in the city."

"Hmm."

"Good. That's settled, then." Mrs. Wolverton looked over at Conradin. "But I dread the morning when . . . when I'll have to tell him about his father. It'll break his little heart, poor lamb." She ushered everyone out of the living room, snapping off the light as she left.

With his lips pressing a smile into Sniffles' warm fur and dreaming a hymn of thanks to the White Avenger, Conradin drifted softly to sleep. ■

MOVING?

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Probability Zero

All The Things That Can't Be

Ian Randal Strock

Dear Stan,

I wanted to start with something cute, like "I'm sorry. Your rejection does not fit our current needs, therefore I'll be expecting to see my story in an upcoming issue." And while that might have worked with a college admission, I've been on your side of the desk enough to know it wouldn't work here.

But then I thought a bit more about your words, when you said my story "has an interesting idea, but the overall effect is too similar to a couple of other stories I already have. Would you believe two end-of-universe stories that I *bought*, plus some others that I didn't?" After working for you for six years, and then starting my own magazine, and looking for the answer, your rejection letter may have provided the key. I think I know what makes you such a good editor.

It isn't simply picking good stories from bad and publishing them in an interesting combination (though that's part of it). And it isn't merely helping writers who are *almost* there with their writing, to push them over the top into professional publishability (though, again, that's a part). It isn't even pushing the magazine on unsuspecting readers who desperately need to be reading it.

I think what you're doing, and what I wasn't able to do with my own magazine, is cherry-picking the brains of writers. As many times as I've asked, I can never remember which branch of physics gave you your doctorate, and I think that's by design. It isn't physics at all: it's psychics. You're using the writers who submit stories, and the stories themselves, to gain a greater insight into what's really going on in the world. At conventions, you laughingly tell tales of receiving multiple talking fish stories in one week, only to track down the strange article in some obscure newspaper that set all those writers on the same line of reasoning. And you wrote an

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amusing editorial about "The Ideas that Wouldn't Die," warning would-be writers to not waste their time writing the same story you've rejected hundreds of times.

But in all that time, you've also been using those statistics, the numbers of stories with the same theme, to track and tap the collective subconscious. You tracked down the source of the talking fish stories not merely for your own amusement, but to ascertain that it was a cause, and that the talking fish stories weren't prescient. And the ideas that wouldn't die are all stories that you've backtracked sufficiently that you simply *know* it isn't all a dream, or a video game, or that we're each of us Adam or Eve. So you've used Holmes' Dictum, and removed all the things that can't be.

And more than that: I've figured out why the lead time between selling you a story and seeing it in print is so long, and why you're able to live so well on an editor's salary. You're using these predictive stories to guide your own investments. Nanotechnology, biotech, virtual reality: you were in on all of them before they hit the market, because you knew they were coming, through the stories you're reading and publishing. And of course, once you're properly invested, publishing the story only increases the public demand for whatever it is, driving up the value of your initial investment. You know, if you were an investment advisor, you'd be accused of artificially pumping up the prices of stocks, but as an editor, you can get away with it with impunity. I applaud your foresight (or at least, the foresight of your writers).

But now I have to ask: Have you backtracked the spate of end-of-the-universe stories you've recently seen, or should I start worrying? ■

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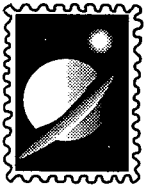

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Drilling to the Golden Age

I did it again this morning. I forgot my wedding ring. There was nothing intentional or sinister in this. I'm simply a victim of the drill.

I don't like to wear jewelry. I won't even wear a watch except for strictly utilitarian reasons. I never wore rings of any kind, not even a class ring, before I got married.

My wedding ring is a simple, smooth gold band. When I first put it on, I had it in my mind that I would never take it off. But after awhile, I did. When it comes right down to it, I don't like wearing my ring because I don't like how it feels on my finger.

Now I only wear my ring when I leave the house for work or shopping or school functions. Every day before I head out the door, I go through my ritual. I open the drawer in my rolltop desk and get my stuff: my wallet, my car keys, my breath mints, some loose change, and my wedding ring. That's the drill, five things—my hand knows it has to do five things.

But this morning while poking around for change, I couldn't find any pennies, and I needed some, so my hand had to do some extra searching. But then my hand thought it was finished. That extra poking around was the fifth thing, so it told my brain via some channel unmonitored by my conscious mind that I was finished with the drawer. It wasn't until I was engaged in my "drive to work" drill that my left hand, sensing something amiss, nagged my conscious mind to find out what it was. Then I noticed that I hadn't put on the ring.

It's a nuisance to be so habituated that a minor disruption can result in forgetfulness. But isn't it incredibly cool that, most of the time, something as thoughtless as my hand is capable of getting my stuff with my conscious mind needing to exert such little control?

We drill for this kind of reflexivity in sports, and musicians train until their fingers know what to do even if their brains forget. Indeed, the whole human mind/brain/sensorimotor system is capable of some rather incredible things.

We're all familiar with stories of autistic savants, able to multiply huge numbers faster than you can do it with a calculator, or able to tell you instantly what day of the week Christmas fell on in 1834. The average person can actually acquire this latter talent. A graduate student working on savant syndrome was asked to memorize calendars. At the end of the experiment, he was able to tell you what day it was on any given date within the period covered by the calendars he studied. But what is most fascinating is that he didn't have to calculate or remember to get the right answer—he just knew it. His brain took the information in and arranged it in a way to make it easy to get at.

I've some experience with this sort of thing myself. When I did inventory control at a hospital, one of my daily chores was to visit each supply location in the nursing areas and inventory the items on hand by keying the quantities into a

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handheld data unit. Back at the desk, I'd download the data into my computer and generate pick tickets for the clerks to use for restocking.

One day after my rounds, the data unit would not talk to the computer. So I dug out the back-up manual sheets and prepared to go do the inventory all over again. But when I glanced at the sheets, I realized I could fill in many of the quantities from memory—there in my mind were images of the items I'd inventoried that day. I went down the sheets and found I could fill in the needed quantities with no trouble at all and no doubt in my mind. Without even *trying* to develop the ability, via simple repetition, my brain had built up a cognitive map that was routinely filled up each time I went around to inventory, same as the handheld unit.

What could I have done if I'd worked at it?

Back in my September 2006 column, I lamented some problems on the American education scene, specifically with mathematics, fearing we are headed into a Dark Age. Now I'd like to mention one method that, if employed, would help fix some of the problems, perhaps even usher in a Golden Age, and it comes from a uniquely American source.

You see, the ability I developed with the handheld is a mere shadow of the sort of ability once deliberately inculcated for use in one particular job market. The story can be found in Mark Twain's wonderful book *Life on the Mississippi*. Twain spent his pre-writer years as a riverboat pilot, and he eloquently describes just what sort of procedure he had to go through to become one.

Piloting a steamboat on a river is not at all like taking a motorboat across a lake. Rivers change shape, both along the banks and underneath the surface. A riverboat pilot had to be able to read the surface of the river and *know* which ripples and waves indicated a problem and which didn't, which submerged obstructions were their last trip, and which were not. He had to know every landmark, every sandbar and bend. He had to know every one of those ripples and waves and landmarks and bends along thousands of miles of river.

He had to know them in the dark.

Twain got his training from a pilot named Bixby. Here are some bits and pieces from Chapter VIII, "Perplexing Lessons":

Twain says: "At the end of what seemed a tedious while, I had managed to pack my head full of islands, towns, bars, 'points,' and bends; and a curiously inanimate mass of lumber it was, too. However, inasmuch as I could shut my eyes and reel off a good long string of these names without leaving out more than ten miles of river in every fifty, I began to feel that I could take a boat down to New Orleans if I could make her skip those little gaps."

This wasn't good enough for Mr. Bixby. As Bixby points out: "My boy, you've got to know the *shape* of the river perfectly. It is all there is left to steer by on a very dark night. Everything else is blotted out and gone. But mind you, it hasn't the same shape in the night that it has in the daytime."

To this assertion, Twain asks: "Do you mean to say that I've got to know all the million trifling variations of shape in the banks of this interminable river as well as I know the shape of the front hall at home?"

"On my honor (replied Bixby), you've got to know them *better* than any man ever did know the shapes of the halls in his own house."

After an extensive explanation from Bixby of the myriad ways in which a river "has a different shape at night than in the daytime," Twain whines: "Have I got to learn the shape of the river according to all these five hundred thousand different ways?"

"*No!* You only learn *the* shape of the river; and you learn it with such absolute certainty that you can always steer by the shape that's *in your head*,

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and never mind the one that's before your eyes."

Twain was never skeptical that such a thing could be done, only that he would ever be able to do it. Today, most wouldn't even think it was possible. In this era when ever-more-fancy equipment is substituted for acquired skill, few would consider that what Bixby could do, and what he demanded of Twain, was anything other than unrealistic and ridiculous.

But this is what Twain says in chapter XIII, "A Pilot's Needs":

"Give a man a tolerably fair memory to start with, and piloting will develop it into a very colossus of capability. But *only in the matters it is daily drilled in.* A time would come when the man's faculties could not help noticing landmarks and soundings, and his memory could not help holding on to them with the grip of a vise . . . Astonishing things can be done with the human memory if you will devote it faithfully to one particular line of business."

The modern American classroom burns up a lot of time and money in the interest of "making learning fun." Twain tells us that learning to be a pilot was anything but fun. His self-esteem was the first thing to go, often replaced by despair. How could he possibly have learned via the drill method? Drill is the antithesis of fun. And learning *should be* fun, right?

Nope. If what must be learned is necessary and valuable, learning it need not be fun at all. Sometimes it *cannot* be fun. It can be extremely tedious, boring, and emotionally unfulfilling. And as every student of physics soon learns, it can sometimes be almost incomprehensibly difficult.

If American education is to be fixed, I say we must re-institute extensive drilling as a teaching method. Our kids use drills to become proficient at sports. They use drills to become adept at playing musical instruments. They get damn good at video games via routine repetition. So why do we lack the courage to declare that history has shown us things that are worth knowing, and that is reason enough for teachers to drill students in them?

I'm not talking about sheets of simple arithmetic problems where you can expect to get 96 out of a 100 right, and in less than five minutes. If you relentlessly force, say, your senior class math students to do physics problems every day for weeks, believe me, in a month or two, taking derivatives and integrating functions will become second nature to them. And that will unleash them to *really* master the "tough subjects," for lack of facility with the math is by far the biggest impediment to succeeding in engineering or the hard sciences.

The students will hate it; they'll bitch and complain. But that's just too damn bad—the future is at stake. And the ends will more than compensate for the means.

In Twain's day, the rewards for sweating it out and learning the ropes of riverboat piloting were worth the grief. Sure, pilots made a lot of money, but the rewards were much greater than that. I'll let Twain finish out this column, with this description from chapter XIV, "Rank and Dignity of Piloting":

"The moment that the boat was under way in the river, she was under the sole and unquestioned control of the pilot. He could do with her exactly as he pleased, run her when and whither he chose, and tie her up to the bank whenever his judgment said that that course was the best. His movements were entirely free; he consulted no one, he received commands from nobody, he promptly resented even the merest suggestions. Indeed, the law of the United States forbade him to listen to commands or suggestions, rightly considering that the pilot necessarily knew better how to handle the boat than anybody could tell him. So here was the novelty of a king without a keeper, an absolute monarch who was absolute in sober truth and not by a fiction or words." ■

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The Suit

Bud Sparhawk

Do we *really* need all the help we can get?

My morning did not get off to a great start.

YOU DID NOT PICK UP YESTERDAY'S MILK ORDER, the fridge chided over my house link. I looked in my to-do and couldn't find the order. Once again, my unpatched suit hadn't picked up the fridge's message, but just try explaining that to an irate icebox at too-damn-early on a dismal November morning when you're standing around in the bath wearing nothing but your earbud.

After cursing the engineers who had bestowed that Pandora's box of a modern appliance on me, I added "Get milk" to my to-do and resigned myself to a milkless breakfast of dry VegeCrunchies and the electrolyte-supplemented juice my ever-solicitous toilet had recommended in its prim schoolmarm voice after analyzing my morning pee and dump.

I wanted to follow my breakfast with a chocolate doughnut and a hot cup of coffee, but the kitchen overseer insisted I eat one of Merck's enhanced biomedical apples to go with the stove's selection of an invigorating organic herbal tea. FLU SEASON IS APPROACHING, it warned me as I took the apple from the tray. YOU DO NOT NEED ADDITIONAL STIMULATION, it added as I sipped the vile decaffeinated brew that it had dribbled into my commuter's cup.

For a moment, the thought crossed my mind that the whole kitchen was pissed at me for forgetting the milk. I took a bite of the apple, mindful of my toilet's warning about restricting my sugar levels, and wondered, as I dumped the apple's core into the disposal, how my ancestors had managed to survive without smart appliances ensuring their continued health.

But a part of me wished I could find out.

The closet wanted to know what I wanted to wear to the office but with-

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out the coffee and doughnut I was too sleep-fogged and sugar-deprived to think. Instead I grabbed the dark blue, double-breasted Lauren I'd worn yesterday. I really liked that suit, even though it was running a buggy version of e-suitware.

I stopped upgrading and patching that suit's software when I heard Lauren was about to release version 7.0. I generally avoid buying the first version of any release, but for Lauren suitware, I'll always make an exception.

With Lauren about to release, it was certain that the other major lines would quickly follow with upgrades of their own. Everyone in the dog-eat-dog world of the e-fashion industry was anxious that no rival gained more than a microsecond's advantage.

For a moment I considered wearing the Armani, just for variety. I'd gotten that suit for a semi-formal dinner party two months ago. It was nice looking, fit me well in fact, but, like most of that line's strict protocols, refused to link with those suits that had been crafted by an "inferior clothier." The suit was gorgeous but was only useful in those circles where its e-snobbery was acceptable, if not expected.

The Armani's haughty incompatibility hadn't saved me from the clutches of a woman who had been wearing an Eddo gown. I later learned too late, and much to my embarrassment, that she'd set her e-jewelry to autoblog a continual stream of everything she was doing, both clothed and otherwise. That was a little too much disclosure for my taste, especially since it reflected poorly on my, how shall we say, performance.

So I put on the six-month-old Lauren, whose timeless cut was still fashionable. That's the value of classic cut and fabric.

Even with its occasional problem, the buggy v6.3 suitware was adequate for my workaday needs. The software kept a close watch on my health, maintained my appointment calendar in real time, and knew when to adapt to the sudden changes in temperature as I moved from frigid conference rooms to overheated offices, cold washrooms, or even into the intense heat of Dallas's summer afternoons. I could put up with the occasional communications bug for a few more days, I thought.

Lauren had announced that the new suitware would have not only all the functionality of v6.3, but would maintain active links to the local environment, perhaps alerting the owner when their favorite restaurant was featuring something they liked or discovering where new shows were opening nearby. It even had a flash advertising suppression feature, which was skirting on the illegal, but, so long as the suppression remained on less than ten minutes, it was permissible. That was a small price to pay to keep the suit network viable.

The suit's bug sometimes made meetings awkward. The automatic exchange that was part of the communications package sometimes locked up. When that happened I had to go through an awkward suit-to-suit request-permit-acknowledge routine that wasted precious seconds and made me look like a novice e-suiter.

The new version supposedly prevented that sort of gaffe and, in addition, promised to grab name, title, business names, web URLs, addresses, cell and other phones, suit numbers, e-mail, personal web sites, blogs, registered biases or proclivities that were legally required or that demanded a degree of discretion, and any allergies or medical conditions of which I should be aware, all within one microsecond. Acquiring that much richer data set would place me at a definite advantage when it came to office schmoozing, or even measuring up a client. The first one with any advanced e-suit features always got a leg up on the competition.

YOU HAVE GAINED TWO POUNDS OVER YOUR IDEAL WEIGHT, my shoes announced as I slipped them on. I al-

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ready suspected that from the way my underwear had tightened my waistband and how my SmartShirt had loosened the fit around my stomach.

WATCH YOUR BLOOD PRESSURE, my tie warned me as it clicked into place against my neck and synchronized with the shirt, suit, underwear, and shoes.

Thankfully, my suit had nothing to say as I slipped on the jacket. I suppose it was just happy to be worn.

DON'T FORGET THE MILK, the fridge reminded me on the way out. WATCH THOSE CALORIES, the kitchen reminded me. HAVE A NICE DAY, said the door.

The morning went quite smoothly as my suit and I swam through the tsunami of junk calls, messages from assorted clients and vendors, competing text, cell, and phone calls, and requests from all the office machines, all anxious to perform some task for me. None of them gave rise to the appearance of the bug.

At the same time I was trying to keep up with the office's suit-to-suit banter, news, and the continuing arguments about football, baseball, soccer, and damn near every other sport I never watched. From the reactions of others my suit was probably missing half of what was being transmitted. Bugs. Sometimes I was grateful for them.

By the time my lunch break arrived I was fed up with the cascade of missed jokes, partial gossip, and tiny, tantalizing snippets of someone's previous night's adventures. I think there was a futile attempt to organize another disastrous office kickball league, but it might have been another sports discussion. Hard to tell when you can't monitor the entire string. Although I love my job, lunch gave me an opportunity to get away from the confusing din.

Dallas's downtown was teeming with the hustle and bustle of the workaday crowds and the buzz of a million advertisements shouting on every channel of my suit as I strolled along. Despite the commercial and political cacophony, I loved walking around downtown and watching people in their endless variety: a stagger of joggers churning legs at a stoplight, the gabble of women carrying on a six-way vocal and electronic conversation, a fat man gesturing wildly as he shouted into his earbud, and two rich ranchers in suppression coats, dumb canvas pants, and unsubsidized leather boots ambling along and laughing, deaf to the electronic cries from storefronts, street vendors, and sidewalk kiosks. I resented them for flaunting their wealth so brazenly in public as if nothing mattered to them but what they heard and saw through their naked ears and eyes.

A moment later, my resentment evaporated as I passed by Giorgio's and saw that they were featuring orange blossom salad, my favorite, as a luncheon special. I queried the menu and, since its response didn't produce a stern warning from my briefs, I figured either the salad's labeled sugar content was acceptable or that not having that chocolate doughnut had kept my blood sugar at an acceptable level.

After a delicious lunch I wandered across the street to Dankers to see if they had the new Lauren in stock. I rarely came away from there without buying something, even if it was only an expensive pair of dumb, unsubsidized socks.

The atmosphere inside the store was a welcome relief. Even in autumn, Dallas's afternoon heat can be oppressive. My suit adjusted the weave to let the cool air flow over my skin and, at the same time, dumped the heat into my soles, where the cool Mexican tiles would absorb it.

"Good afternoon, Mr. Dwight," an obsequious sales robot said. "Dankers has a nice line of winter wear that just arrived.

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There are four models that would be a fine addition to your wardrobe." It flashed an image on its screen. "Note the fine attention to detail, the delicate stitching on the lapels, the—"

I interrupted, not wanting to hear the store's spiel. "What are your latest versions of suitware?"

"We have a gorgeous double-breasted Julian running Microsoft's V6.6," the robot responded immediately. "Version 6.6 offers several features that will allow you to . . ."

"How about the new Lauren that's been announced?"

The robot blinked to check inventory. "I'm sorry, sir, but their suitware won't be in stock for several days. Can I interest you in anything else?"

I was disappointed that I'd have to wait, but I didn't want to waste the trip. I needed something more casual than suits. "What have you got in sport jackets and slacks?"

"We have some excellent GTC coats in your preferred color range," the robot continued smoothly as it displayed a selection of coats fabricated by the General Threads Consortium. I watched with some excitement as it paged through the selections just slowly enough for me to appreciate the details of cut and fabric.

I spotted a nice Harris Tweed with cinched belt. "It comes with the latest Apple suitware," the robot whispered when it detected my interest. "The fabric is completely waterproof, stain resistant, and temperature compliant. In addition, the suitware can handle up to sixteen suit-to-suit interactions simultaneously. What's more," it added softly, as if to convey a great secret, "it is on sale at a price you can afford."

For the tenth time in as many days, I regretted not restricting disclosure of my account balances to commercial inquiries. Sure, making my financial health available to authorized stores made shopping more convenient and efficient, but still, it rankled that my finances should be so transparent.

"I'll take it," I said, deciding after a moment's consideration that the price was eminently affordable. "I'd like a new pair of shoes as well," I added, hoping that I could find a pair that wouldn't be so critical about my weight.

"Of course, sir. Would you like them in brown, cordovan, or black? Would you like loafer, or laced, boot or moccasin style, leather or . . . ?"

I stopped the robot, not wanting to hear every option the store might offer. "I think a pair of leather loafers would be nice." A simple, understated pair would go well with the tweed jacket.

The robot blinked again. "We have two hundred and fifty-three possible variations of leather loafers in our inventory," it said. "Shall I display them?"

I knew that the only way to find a pair I liked was to plow through the list. "Let's begin," I said with a sigh.

The robot brought a dozen pair of shoes into its display. I admired the handsome leathers, the fine stitching, and the exquisite polish that seemed inches deep. The pair with a lustrous pearl color and pink highlights was particularly beautiful. There was only one problem. "These are all women's pumps," I exclaimed.

The robot blinked again. "But you requested . . ." it began and then switched to "Of course, sir. My mistake," and displayed a selection of more appropriate loafers.

"No tassels, please," I insisted, which dropped the number of possible styles to a mere one hundred. We proceeded merrily along until a collection of woman's red heels appeared on the screen. They were elegant—more suitable for an evening out, I thought, than a business office.

"Those are lovely," a husky voice announced from behind me. "I admire your taste. I'll bet your wife or girlfriend would be very happy with any of those." I turned to find myself facing an attractive redhead. "Unless they are for

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you?" she added.

"First," I corrected her, "I am not shopping for anyone, and, I should add, there is no way I would wear *these,"* I pointed at one pair of highly decorated four-inch heels, "under any circumstances."

She tilted her head to one side, put a finger to her cheek, and looked me over. "I don't know," she grinned. "You'd probably look cute with those—taller, for sure."

"They'd probably look better on you," I replied and returned the smile, thankful for that extra tuck on the waistband. She was awfully cute.

Before she had a chance to answer, her obviously distraught robot interrupted as it rolled up. "Madam," it declared obsequiously. "Your selection, please." Its screen was displaying an array of cordovan, tassel-free, men's loafers.

She glanced over her shoulder and then at me. "I was shopping for a pair of evening shoes. In fact, those." She pointed to one pair on my robot's display panel. "Apparently the store has gotten our accounts confused."

The robots insisted, but slightly out of synch, to each of us. "Aren't-t these-se what-t you-ou requested-ed?"

There was quite obviously a serious glitch in the store's inventory software. Instead of continuing to argue with the witless robots, I said as plainly as possible. "I'll take those cordovans," and pointed at a pair on the woman's display. "I'm sure those red shoes will look great," I added in an aside.

"Perhaps, but only with the right dress," she replied. My suit alerted me to a download request for my profile. Flattered, I responded with a request of my own. A man two aisles over smiled and waved for no obvious reason.

"Any dress would look great on you," I answered gallantly, hoping I was not overstepping the bounds. Flirting had gotten less perilous of late, but the threat of a harassment charge still loomed large. For some reason her data wasn't coming across.

She clapped her hands and called up a green dress on her robot's display. "This is the one I already picked. It comes with the latest e-dress upgrade too."

"A beautiful dress," I said, struggling to keep a smile on my face as I tried to force the damned suit to link to hers.

"Since you agree, that's what I'll get." She leaned toward my robot and said, "I'll take those red heels with the strap," and touched the pair she wanted.

While our robots negotiated with our clothing over the billing, I smiled and got a nice one in reply. Who knew what this could lead to if only my suit would establish that damned link? Were beads of sweat forming on my forehead? In desperation I turned off the comm feature entirely.

Her face became expressionless, the usual sign that someone is turning their attention inward. Her face lost the smile. "Look, I'm sorry," she said quickly as she came out of the call and stepped backwards. "But I have to rush. Nice meeting you and all that," she shouted over her shoulder as she practically ran from the store.

Had it been something she got from my suit?

I tried to access the data my suit had downloaded as I walked back to the office, but there were nothing but blank fields. Had she refused to send her data or was it the buggy suitware acting up again? Damn, and here I thought we were making a real connection, more than just casual conversation, at any rate. Had I read the situation wrong? Was there something about my data that had caused her to rush away? Had a serial killer or potential rapist hacked my suitware? No, that couldn't be. A moment's check told me there was nothing untoward in my files. In fact, there was nothing in my files whatsoever, and the suit insisted I was named Susan.

A quick reset restored the suit as of the last backup, which was fifteen min-

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utes before I ate that delightful salad. Sadly, I had no record whatever of anything that had happened while I was in Dankers.

I had to assume that the redhead simply did not like whatever my suit had downloaded to her. The more I considered that possibility the more despondent I became. Why had I ever chosen to wear a suit that wasn't functioning properly? Stupid, stupid, stupid, I cursed.

I needed something to make me feel better, so I instructed my suit to call in an order for a pint of chocolate chip ice cream from an automated kiosk near my apartment. I knew that the pleasure of tasting those chill chunks of chocolate surrounded by creamy vanilla would bring my wounded emotions back into balance.

YOU SHOULD NOT INDULGE IN ICE CREAM, my underwear informed me. I ignored the warning. The ice cream wasn't about weight, calories, or blood sugar levels, and I damn sure wasn't going to let a pair of nagging briefs tell me what I needed to fill the emotional void that had suddenly opened.

DID YOU GET THE MILK? The fridge demanded as I opened the door. I glanced at the yawning emptiness where the milk jug should be and realized I had missed the reminder once again. Was that my fault or was this yet another manifestation of the suit's problems? I'd have to check later.

I'd scheduled the artificial sashimi tuna with wasabi, but the freezer had thawed out a vegetarian medley instead. I stared at the low-cal dinner choice, wondering if this was the fridge's punishment for forgetting the milk. A second's thought made me realize that the kitchen must have learned about my ice cream order and adjusted the dinner choice. Damn, it's really rough when your clothes and appliances conspire against you. "Traitors," I hissed at them as I picked up my ration of squash and corn, asparagus and potatoes, and tomatoes and onions, all afloat in some sort of undoubtedly nutritious and vitamin-fortified sauce.

The package from Danker's arrived and begged to be opened as I munched my way through my obscenely healthy dinner. Despite their pleas, I finished my plate and dumped the dirty dish and tableware into the washer. THANK YOU, it said, no doubt grateful for the small bit of attention it got from me twice a day.

I opened the shoebox that should have held my loafers, but instead, I beheld the redhead's three-inch heels. It didn't take a genius to figure what must have happened: I'd ordered my shoes from her screen and she from mine. The perplexed store software must have confused our orders. The mix-up wasn't that big a problem. I'd just send them back with a note. Sure, and she'd probably do the same with the loafers she got, and that would be the end of it.

Before I could open the other box, my cell chirped. "You must have my heels," an obviously distraught female voice proclaimed before I could say hello. "I needed those for tonight, damn it."

"How did you . . ." I began and then remembered that she'd accepted my profile and had my number. This was an opportunity not to be missed. I thought quickly, wondering how I could take advantage of this chance. "I can bring them to you," I suggested. If I could arrange a meeting, perhaps she'd clarify how my profile had offended her.

"Great," she quickly replied. "We don't live that far from each other. Bring them over." The phone clicked without another word from her.

That would have been great if I had her address. Not knowing where she lived left me somewhat embarrassed, frustrated, and wondering if suitware could be jailed for mismanagement of a person's files. I tried to redial her number, but the suit had already deleted it, along with the reminder about the

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damned milk. Wait a minute! Didn't she say we didn't live that far apart? She had to be within walking distance. All I had to do was wander around and hope she would spot me. What else could I do? Maybe she'd call again, I hoped.

I pulled on a dumb pair of jeans with a decent communications link and slipped on a pair of running shoes. YOU NEED TO RUN AT AEROBIC SPEED FOR TWENTY-FOUR POINT FIVE MINUTES, the shoes said as soon as I fastened them. YOU NEED TO LOSE WEIGHT.

Obviously it had been talking to the kitchen about my lunchtime orange blossom salad containing excess calories. Hadn't I burned enough calories, despite eating the vegetarian medley, or did they just want a nice run? Regardless of the reason, it was obvious that the household conspiracy was growing and the other gadgets had recruited my running shoes.

The shoes began playing the opening riff of Jackson's "Apple Downbeat Rag" as I headed out. PICK UP THE PACE it said every twenty steps. PICK UP THE PACE. I ignored it as I set out on my search with her shoebox under my arm.

The area where I live is pockmarked with redevelopments—industrial sites, shops, and storage buildings converted to apartments, condominiums, and multifamily homes. The only way you could tell was that most of the converted ones had awnings over the main doors. The doormen all gazed suspiciously at me as I walked slowly past with uplifted eyes, as if I were casing their posts. Their gazes grew steadily more suspicious every time I passed. I ignored them and prayed that she would spot me as I continued to jog along to alternate exhortations to PICK UP THE PACE and bits of new jazz at an aerobic tempo.

After the third repetition of my circular trek I started to doubt that my lovely redhead would be glancing out her window in anticipation of the arriving pumps. What reason would she have? She probably thought that I, like 99 percent of the population over five years of age, had captured her address during our exchange, just as she had captured mine.

But I hadn't. I was the idiot who decided to wear unpatched suitware and was now suffering for his sins. This wasn't going to work. There was no chance that I would find her among the hundreds who occupied the densely populated area. She would never get her shoes, miss her party tonight, and probably hate me forever. Even if I eventually ran into her somewhere else I'd still be the jerk who ruined her evening by wearing unpatched suitware.

Finally, concluding that this wasn't going to work, and much to the relief of numerous nervous doormen, I headed for the kiosk to pick up my ice cream. Maybe that would console me for my loss.

"I ordered chocolate chip," I keyed to the machine.

ERROR. YOUR ORDER WAS A PINT OF LOW-FAT CHOCOLATE CHUNK PISTACHIO, the ice cream kiosk disagreed with all the weigh of authority vested in it by its software.

I checked my to-do and found that damned milk reminder I had missed earlier. Where was the . . . There, I had it: one order for low-fat chocolate chunk pistachio, just as the machine claimed. Obviously the dietary conspiracy had changed my order. It wasn't the kiosk that screwed up, it was those damned appliances.

"I'm changing the order. Give me a pint of chocolate-chip," I keyed.

YOU HAVE NOT BURNED SUFFICIENT CALORIES, my shoes said in rhythm to its aerobic background beat. There was a twitter of interchange from my briefs.

CONFIRMING, the machine acknowledged as a pint clunked into the delivery chute. HAVE A NICE DAY.

I looked at the container. It was a

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pint of low-fat chocolate chunk pistachio. I looked around but there was no one I could complain to. It seemed that all my software were now part of the conspiracy.

Slowly I slouched away from the kiosk. Nothing, not a damn thing was going right today. I couldn't eat the food I wanted, couldn't find a freaking address I needed, and I'd never get to find out why the redhead had run away from me.

Then the phone rang. "This is Viola, Jeff. Where are you? Did something happen?" It was a reprieve, a breath of fresh air, an awakening of possibility once again. Life was suddenly good.

"I didn't get your address," I blurted. "My suitware has a bug that—"

"Never mind," she replied before I could finish. "I'll bring your stuff over and take a cab. I'm late already."

I beat her to my flat by three minutes, threw the pint on the table, and barely had time to grab the other package when she rang the bell.

She was as breathless as I. She had a makeup case and two packages under her arms. "I got here as fast as I could," she said and pointed at the larger package in my hands. "Is that my dress?" I nodded dumbly. "Now, where can I change?"

"The bath's over there," I pointed at the door. "The other door's my closet." Stupid thing to say, I realized as she took her packages and disappeared into the bathroom. I prayed she didn't get too chummy with my toilet. As it had with previous women, and notably with my mother, it would lecture her on the dangers of unprotected sex, the evils of excess sugar, and the need to remain hydrated.

I slipped off my running shoes. YOU DID NOT EXERCISE SUFFICIENTLY, the shoes said in their drill sergeant manner as soon as my fingers touched the straps. YOUR AEROBIC HEARTBEAT HAS NOT BEEN RAISED SUFFIENTLY FOR GOOD CARDIAC HEALTH.

"Screw you," I said as I threw them across the room. I opened the box with the new loafers. They looked as nice as I imagined they would. SEARCHING FOR DATA was all they murmured in a refined voice as I slipped them on. I was admiring the look and feel of the new jacket when the bathroom door opened and a vision in green stepped out.

Viola had done something with her hair and makeup that took my breath away. Her eyes looked larger, her lips more full, and her figure in that green evening dress was breathtaking. I barely noticed the tips of her red shoes as she stepped daintily forward.

The tweed's link was going insane from the downloads her dress was throwing at me. Music, images, lists of favorite topics, foods, colors, and a plethora of possible conversational gambits. I stood there, mouth agape, not knowing how to deal with this tsunami of information. I hadn't had time to set the filters on the defaults. The tweed was having fits trying to access the apartment's databanks, find my personal profiles, and respond in kind.

Viola looked as confused as I and was fumbling at her waist. "Sorry," she said. "I forgot to adjust the dress. The default's *Cocktail Party.*"

I was struggling to gain control of the tweed, which was merrily downloading my entire music library, to shut off the gushing flood of unwanted data. On top of running buggy suitware I now looked like someone who couldn't control their own clothes.

"Think what a crowded room must be like with everyone's clothes throwing out that much information," I laughed as I tried to access the tweed's menu.

"It probably wouldn't matter in the general din at most of those affairs," she replied as she continued to flail at her dress. "Why do they set the damn defaults like this?"

I tore the jacket off and threw it down, breaking the circuit and hopeful-

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ly silencing the stream of too much information.

"I think it's stuck," Viola cursed as she beat at her waistline. "Oh, crap." She ran back into the bathroom as my briefs beeped for attention.

YOU ARE UNDER STRESS, they said. LIE DOWN AND BREATHE SLOWLY. YOUR HEARTRATE IS EXCEEDING NORMAL LIMITS, my new loafers said. DID YOU GET THE MILK? asked the refrigerator.

Viola emerged from the bathroom, a dripping dress in one hand. "I had to drown it to shut it off," she said. "Your toilet is very upset with me."

"I ought to shut everything down," I said. "I don't think I can take it anymore." When she gave me a perplexed look there was nothing else to do than explain how my day had gone: my issues with the kitchen; my choosing to wear buggy suitware; the screw-up in Dankers; the argument with the kiosk; not being able to find her apartment; and the desolation that I felt that I would never again see this attractive, intelligent, wonderful woman I'd met as a result. If I had less self-control I would have cried at that point. "I'm almost at the point where I want to just shut down my links and cut myself off from everything."

"I sometimes feel the same way," she admitted. "But I can't imagine what it would be like to be unlinked. Oh, did you know that your ice cream is melting?"

I had forgotten the pint of fat-free I had absentmindedly set aside, a container that was now leaking a bilious green flow across my coffee table and spilling onto the rug. I turned, scooped up the container, and tossed it into the fridge.

YOU SHOULD EAT NO MORE THAN AN EIGHTH OF A PINT, the fridge chided as I dropped it into the freezer slot.

"I'll never eat any of that low-fat crap," I remarked as I slammed the door on the fridge's dietary advice.

"I guess I can forget going anywhere else this evening," Viola said sadly. She was looking at the sodden dress.

"Maybe I can make it up to you," I suggested tentatively. "We could go somewhere we don't have to dress up." There was no way I was going to risk wearing a suit this time.

She glanced at the refrigerator. "That would be nice. I doubt I have anything to fear from someone named Susan who's never even gotten a traffic ticket."

When I saw her inviting smile I felt as if I had won the lottery. "Do you like chocolate chip ice cream?" I ventured.

"The only thing better is rocky road," she replied with a wistful expression. "Or maybe tin roof." Then her face fell. "But my dressware won't let me have it."

We looked at each other for a moment, nodded, smiled, unlinked, and shut off the world to everything but each other. ■

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Permission to Speak Freely

David Walton

What to do about those pesky details that always turn up in research? The real world tends to complicate the answer. . . .

I stood watching my friend through the glass, knowing that the thick cable hanging from the back of his head like a samurai's queue was delivering terrible pain to his nervous system. The technician next to me flipped a switch on her panel, causing a fresh signal to explode up the cable directly into his hypothalamus. He didn't even flinch.

"Patient thirty-eight," said the technician, her voice like clear water.

"Patient thirty-eight," said my friend, Dr. Whittaker Laplace, his immense girth seeming to spill over the sides of the metal chair. "Brain aneurysm, frontal lobe, left side." His voice was clinical, as if the pain he described had not just stabbed through his body. The only sign of stress was a trickle of sweat running down one cheek.

On the other side of the wall, visible to me but not to Whittaker, sat fifty patients in neat rows, the same cables running from the backs of their heads to tangle and twine on the floor. The cables converged at a switchbox and connected through a large machine before passing through the wall.

"Patient thirty-nine," said the technician.

"Patient thirty-nine," Whittaker echoed. "Osteoarthritis of the proximal interphalangeal joints, most prominently in the second and third digits of the right hand."

The technician shook her head. "Guy's a machine." Then, into the microphone: "Patient forty."

It was amazing . . . but I couldn't bury a sense of unease. Sympathology had gained a lot of momentum in the press, and I knew I would be under pressure from the university and its corporate backers. Not to mention from Whittaker himself.

Whittaker had improved his skill since the first time I'd seen him in action—al-

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most five years earlier in *Two Goodfellas*, a corner tavern on Philadelphia's Market Street with neon signs, loud music, and posters from gangster movies on the walls. A huge man even then, with a voice to match and a full black beard, Whittaker had waved an early sympathology rig around the room, daring patrons—mostly U. of Penn students—to hook up and feel his kidney stone. Unwilling to be outdone, I had joined the line, but when my turn came, I wished I hadn't. The pain was intense; if that was really what Whittaker was feeling, he didn't show it. I suspected a trick.

But it wasn't a trick. It was a new technology that Whittaker had pioneered. At the time, I was in medical school, planning to go on for a doctorate in radioimmunology. As a result of my friendship with Whittaker, I switched to neuroscience instead.

"Patient fifty: fractured collarbone," said Whittaker. "And a splinter in the palm of his left hand."

I heard scattered laughter from those viewing the test.

"That concludes SMP05," said the technician. "A great thank you to all our volunteers."

On the patient side of the wall, technicians disconnected the volunteers from their cables. On the other side, Whittaker stood and stretched. His presence had caused something of a stir in the neuroscience lab. Not many remembered when he'd been a student at Penn; all they knew of him was the media coverage. Public interest in sympathology was hot: If your baby woke up screaming inconsolably in the middle of the night, Whittaker could tell you what was wrong. If your loved one had a stroke and couldn't communicate anymore, Whittaker could tell you if they were feeling any pain. He'd become something of a national celebrity.

The technician ushered Whittaker into the test berth. "Dr. Laplace," he said and pointed at me, "this is our test director, Peter Atterley."

Whittaker laughed and gave me a crushing hug. "How have you been, Peter?"

I felt all eyes on me. "Quite a performance you treated us to," I said. "You always did have a high tolerance for pain."

He shook a fleshy finger in my face. "Now, now—that's the critics talking. I feel pain to exactly the same degree as those patients do."

It was our old argument, and I slipped into it easily. "You only know how *you* feel. You assume the sensation is the same for them, but there's a lot more to pain than a signal passing through the spinal gates."

"I've had kidney stones—as you know. I've felt patients' kidney stones. They feel the same."

"Granted. But all it proves is that your brain reacts the same way to the same stimuli. Not that you have actually shared the patient's experience."

He crossed his arms and loomed over me. "And pray, how will you test *that*, Dr. Peter Atterley?"

I smiled. "The only way we can. You'll find out tomorrow."

We agreed to meet for dinner, but before I could leave, I had to report on the day's testing to Connie Maclaine, chair of the department. I hoped it would be a short conversation; she and I often saw things differently, and I didn't relish a battle after a long day.

I peeked into her office, a cloth-covered modular unit with walls that stopped three feet short of the drop ceiling. Connie was in her fifties, a dedicated runner with the athletic body to prove it, but with hair going visibly to gray.

"Have a seat," she said. I didn't want to stay long enough to have a seat, but I did anyway.

"Quite a show, wasn't it?" she said.

"Dr. Laplace, you mean? I didn't know you were watching."

"Oh yes. There's a lot riding on this

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study; I'm very interested."

"Riding on it?"

She shrugged. "A favorable recommendation of the procedure from us would go a long way toward establishing sympathology as a viable discipline. Surely you know that."

"Of course."

"Synthiac has been on the phone twice, wanting our results. They're undergoing trials for a commercial version of the machine. They want to synergize our efforts. Benefit on both sides."

I knew Connie's political mind, and I could smell a rat. "Benefit? Like funding?"

She sighed theatrically. "Peter, you and I both know that science only continues as long as the grants do, and ours is coming to its end. Synthiac is the biggest medical equipment manufacturer in the country; a partnership with them would mean work for years to come."

"Great," I said. "So what's the catch?"

"No catch. Just an interest from Synthiac in a swift and clear recommendation. And along those lines, I've been thinking and I want to cancel the final test."

I felt my cheeks flush. I stood. "Synthiac wants to buy a rushed recommendation? You don't call that a catch?"

"Listen, Peter, please. This is not Synthiac's suggestion; it's mine. We're short on funds; I already had to let two of our technicians go. We know the machine is safe; we've tested it nine different ways. And after what we saw Whittaker do today, can there be any doubt of the procedure? It was amazing! One hundred percent accuracy."

"There are wider implications. That's why we designed tomorrow's test; our paper won't just cover the accuracy of diagnosis, but the degree to which pain can be viewed as a measurable quantity. It's a serious philosophical implication that we can't ignore."

"This is a scientific lab, not a philosophy club. We report results."

I worked hard not to roll my eyes. "That's naïve," I said. "Science can't be done in a vacuum. There are social ramifications. Corporate giants throwing money at us won't change that."

She donned her martyr's face and said, "Peter," in a hurt voice, but I couldn't handle any more. I walked out.

I've wanted to be a scientist for as long as I can remember. Ever since my father hung a model of the solar system on my ceiling, I knew that when I grew up, I would design experiments to be performed on the International Space Station and would eventually—of course—win the Nobel Prize. But after earning my Ph.D., I discovered that to do science, you needed money, and to get money, you needed to publish. The political underworld of grant wrangling, peer reviews, and journal publication took me by surprise. Somehow, I had envisioned scientific exploration as a noble pyramid of minds throughout the ages, each building on the work of the last. Instead, there were turf wars, infighting, political pressure, and institutional mentality.

When I met Whittaker Laplace, it was like a breath of fresh air. He cared about truth and nothing else. In the years since he left Philadelphia, he'd been in private practice in Boston, catapulting himself into the news by using his sympathology machine on his patients. What drew so much attention was not just the new technology, but the questions it raised about the meaning of pain. For years, the medical profession had taught that pain was what the patient said it was. A scale from one to ten was the standard formula, with one being no pain at all and ten being "the worst pain you have ever felt." Doctors determined how much to medicate not by what they thought patients ought to be feeling, but by how the patients themselves professed to feel. Pain was not considered a measurable quantity, but a subjective brain reaction, different

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in different people.

Whittaker was trying to change that view.

"It happens all the time," he said. "Some patients are in the emergency room twice a month, complaining of pain for which there are no clear symptoms. Are they hypochondriacs, or do they have real ailments? How can you tell?"

We sat in the White Dog, a self-consciously political restaurant carved out of three adjacent Victorian brownstones on Sansom Street. They served only organic food, everything preservative free and from sustainable food sources. Whittaker was halfway through a salmon burger; I had a beef salad with avocado, pumpkin seeds, and a tasty sage dressing.

I shook my head. "Does it matter? Certainly, if they have a treatable problem, you want to discover what it is. But if you hook up your machine and feel nothing, does that mean the patient is inventing his pain? Just looking for attention?"

"You don't think so."

"I don't think it's conclusive. There's too much about the brain we don't understand."

"Permission to speak freely?" he said.

I grinned at him over my salad. In school, years ago, we'd asked that question as a warning that what we were about to say was inflammatory or insulting. Because we valued clear communication over the risk of hurt feelings, the answer was always the same. "Granted."

"You're caught in the emotional trap of a society too politically correct to validate one perception of reality over another. If there is zero neurological evidence of a pain stimulus, then what the patient is experiencing is not pain. There may be a strong belief in pain, just as a patient may believe he is Napoleon or that the year is 1890. But treatment for such a belief will be different than the treatment for pain."

I considered what he said. We often encountered men whose sense of toughness caused them to downplay their pain, while others exaggerated tiny hurts. On a completely subjective standard, depending on the patient, you might end up giving morphine for a hangnail and aspirin for first-degree burns. But could there be a totally objective treatment?

"What about beta-endorphins?" I asked. "Surely you have different endorphin levels in your brain than the patient does. Wouldn't that change your perception of pain?"

Whittaker smiled. "Certainly. But beta-endorphins come into play in the hypothalamus—our shunt intercepts the signal above that point, so the endorphin effect has already been realized."

I decided to change the subject. "Can you guess what tomorrow's test will be?"

Whittaker chewed his sandwich thoughtfully. Crumbs stuck in his beard. "I imagine you'll have a battery of sympathologists, including me and some other doctors with no experience on the machine at all. A group of patients will rate their pain on the standard ten-point scale and the doctors will do the same. You've already shown that the *type* of pain is felt equally by the patient and the sympathologist; tomorrow you hope to test if the *degree* of pain is equally felt."

I was crestfallen. "So much for my surprise."

"It's the obvious approach," he said, and then a mischievous smile quirked his lips. "Want me to tell you the results, too?"

I folded my arms. "The great doctor has turned to witchcraft?"

"Simple deduction, my dear Watson. Though in this case it should be induction." He waved his arms over his coffee and consulted its depths. "I predict," he said grandly, "that I will, on average, rate pain a point or two lower than the patients, and inexperienced docs will, on average, rate it several points higher."

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"How do you know?"

He leaned back in his chair, steepled his fingers, and arched one eyebrow. "Witchcraft," he said.

Of course he was right. The test was performed, the results tallied and sliced from every angle. The summary graphs showed exactly the pattern Whittaker predicted.

"I'm not prophetic," he said. "It just stands to reason. To me, most patients' pain is unremarkable, because I've experienced the worst that's out there. To the patients themselves, with only their own experience to draw from, it's decidedly worse. But for the inexperienced, the pain of a suffering patient is often worse than any they've known."

I flipped through the graphs on my computer. "Doesn't this shake your belief in pain as a measurable quantity?"

"It's the same pain. It's the *scale* that varies from person to person."

I barely heard him. My attention was captured by the last graph in the collection. "This can't be right."

"What can't?"

The graph plotted the probability distribution of the results, a roughly bell-shaped curve. I pointed to it.

"What do you mean? Test results like this are almost always Gaussian," Whittaker said.

"Gaussian, sure. But look how far out these outliers are." I clicked on a data point and the computer displayed the underlying result. "This woman reported her pain as a nine. The other doctors judged it to be between eight and ten. But you reported a three."

Whittaker shrugged. "As I said, I've felt a lot more pain than . . ."

"Wait," I said. I brought the original graph back up and clicked on a data point at the other end of the curve. "Here the patient reported a two. The other doctors ranged between one and four. But you judged it a seven. There are other discrepancies as well, with other doctors."

"There's a problem with your data then," he said. "It's not matched up properly."

"The bell shape belies that conclusion—most of the time, you're tracking just below the trend. It's just on these few."

"Then those few are the ones that are wrong. Check your data."

I shook my head. "Not possible. We cycled the patients through twice to filter out miskeying or gaps in attention. You gave it a seven both times."

"So what are you saying?"

"I'm saying we have to rule out the possibility that the machine doesn't consistently transmit pain stimuli."

"Peter, I've been using this machine for three years now. You can trust me, it consistently transmits pain. Either the data was mixed up, or the patients are lying, or . . ."

"Permission to speak freely," I said.

He glared at me. "Granted."

"You're too prejudiced on this subject to judge fairly. Trust me to conduct the test scientifically and keep your personal experience out of it."

For a second, I thought he was going to hit me. Then he laughed. "Good old Peter," he said. But his knuckles were white.

I spread out hardcopies of the graphs on Connie's desk. "You see the problem."

"The outliers?" she asked, her tone plainly incredulous. I'd caught her coming back from a run before she'd had a chance to shower, but she'd wanted to hear my results right away. She wore a blue tracksuit and had tied her hair back in a severe ponytail. Her cheeks and neck were flushed.

"The outliers are significant," I said.

She shuffled the papers. "Let's start with the averages. If I'm reading this right, the average pain reported by the patients was 5.7."

"True. But . . ."

"And the average pain reported by the

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sympathologists was 5.5. This is cause for celebration! Go get yourself a beer. Write it up tomorrow."

This was not going well. I tried to keep my voice civil, to explain rather than get annoyed. "The question is whether the difference in those means is important—whether the machine, or which person is feeling the pain, has a statistically significant effect on the results."

"It's a bell curve," she said, scratching at her neck. "A bell curve has outliers. It always does. I'm not interested in six sigma cases here, Peter. I'm interested in the trend."

"We did a paired *t*-test on the data," I told her. I explained how a *t*-test could determine if the means of two normally distributed populations were distinct.

"You're telling me a .2 difference is significant?"

I nodded. "It's not just the mean that matters. It's the deviation."

Connie was quiet a long time. "All right, Peter," she said finally. "I believe you. So what should we do?"

"We need another test."

"To accomplish what?"

"We'll repeat the same basic procedure, with a new battery of patients, but including the outlier patients from last time. If the same discrepancies reappear with the same patients, we'll know we have a problem we can't ignore."

"We can't afford another test."

"We need to. Or else I'll have to include those outliers in my paper and let them speak for themselves."

A lock of hair strayed from Connie's ponytail and stuck to her forehead. She brushed it back. "It's a diagnostic tool. What does it matter if the doctor feels the full severity of the pain?"

"It does matter," I said. "People believe what doctors tell them. If a family hears that their crying child's pain is slight, they may not seek a solution to a real problem. We can't control how the technology will be used. What if hospitals start dispensing morphine based not on patient request, but on sympathologist recommendation?"

I saw the martyr's look creep back into her face. "I'll say it again," she said. "We can't afford another test. We just don't have the money. Now maybe, in another few months, if Synthiac gives us the grant we hope . . ."

"We'll have other projects and other priorities. It'll never get done."

Connie took a deep breath, then let it out slowly. When she spoke, her voice was soft. "A few years ago, when my daughter was only a baby, she had a molar coming in sideways, pinching a nerve. Caused her terrible pain, but she couldn't tell us where it hurt. They missed it on the x-rays, and of course blood work showed nothing. It was a week before we figured it out. A sympathologist could have told us in minutes.

"This is primarily a diagnostic tool. As such, it's passed every test brilliantly. We have no money for another test. So what's it going to be? Are you going to hold up production of an obviously valuable diagnostic tool that, to some patients, could mean the world? Or can you report what we know and leave the philosophical question for another day?"

I sat gazing at my feet. "I don't know."

"Figure it out. If you can't write this paper, I'll have to find someone who can." She swiped her palms together as if washing them and stood up. "Now if you don't mind, I'd like to take a shower."

"She threatened to fire me," I said. We were back at the White Dog. I had suggested a cheaper venue, but Whittaker offered to spring for the check, and that was enough for me.

He took a huge bite of his leg of lamb and wiped grease from his mustache with a napkin. "There are other universities."

"My grandfather went to Penn. My father spent his whole career as a researcher at Penn. I practically grew up here. This isn't just a job for me; it's my home." I stared at my Kung Pao tofu,

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cheeks resting in both hands. "Why does everything have to be about money?"

"You mean, why can't you pursue science at society's cost but with no limits or accountability?"

I threw a toasted peanut at him. It missed and bounced onto the floor. "It stops sounding noble when you put it that way."

"It is noble. Just not realistic."

"Why not? Sympathology is going to change the practice of medicine in significant ways. Why can't the world pay to make sure it changes in the right ways?"

Whittaker shook his head. "I'm with you completely—except in this circumstance. Sympathology *works,* Peter. I've been doing it for five years."

"Data doesn't lie. You used to believe that."

"Of course it does. Data lies all the time. It just depends on how you slice it. The trick is to look *beyond* the data to the truth it represents. Yes, it would be nice to prove out the truth with test after test, but cost forces us to efficiency."

"To expediency, you mean."

He put down his fork. "Listen, Peter. Sympathology hinges on trust. If people don't believe it works, they won't accept their diagnoses."

"My paper will show that it works," I said. "As far as diagnosis is concerned, the tests were perfect. But don't you think I should include my reservations regarding the degree of pain felt?"

"No. You know how it goes. A scientist writes a paper saying Procedure X is 99.9 percent reliable, except for a few complications in one case. Then the media gets a hold of it." He waved a hand in the air as if throwing words up on a screen. "'Breaking news! Scientists say Procedure X may harm your children! Full story at 11:00!' Ten people read the original paper; ten thousand hear it on the news. That's the data, but it sounds like a lie to me."

"I know it," I said. "But what else can I do?"

"You can tell the truth. Tell them that sympathology works."

I didn't go home that night. It was September, the evening cloudless and cool, so I wandered down the university streets until I ended up on the South Street Bridge. Halfway across—arguably the best place in the city to see the Philly skyline at night—I stopped and leaned on the rail, trying to clear my thoughts. A few runners passed me, but otherwise the bridge was deserted. I heard the city sounds that usually go unnoticed: the buzz of traffic on I-76, the clang of a Dumpster lid, the moan of a distant siren.

The bridge was an ancient edifice, over one hundred years old, and I kicked crumbling bits of concrete off the edge, watching them tumble into the dark river below. What to do? I had been arguing against Connie and Whittaker's points, but the truth was, I believed in sympathology, too. The machine worked; the procedure worked. It would be a great help to the medical field, particularly for those too young or ill to communicate. And Whittaker was right about the delay a mixed recommendation would cause. I'd known people in the past who were *too* concerned with ethics—so afraid of being blamed for doing the wrong thing that they did nothing at all. Was that how I was acting now?

Despite the hour, I walked back to the lab to write up my report, still not knowing what it was going to say. The test berth was empty, my office dark. I worked with only the light of my computer screen, typing, deleting, revising, then deleting again. In the end, I wrote two papers. The first contained everything: the outliers, the paired *t*-test, all of my concerns for how sympathology would be used. The second contained the simple truth of the reliability of the procedure that the testing had, on the whole, revealed.

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At four thirty in the morning, I printed out both versions, stapled them, and laid them side by side on my desk. There was no point in going home. I propped my feet up, leaned back in my chair, and tried to sleep. I was exhausted, but my mind was like a dog with a bit of rag—it had something to chew on and it wouldn't let go. The same old arguments spun round and round in my head, made less coherent by weariness. If I submitted paper one, I would possibly lose my job, but more likely just be barred from doing any research that mattered until I quit out of boredom. If I submitted paper two, it was possible that nothing bad would happen at all. But it was also possible that the medical profession would replace true sympathy with sympathology. If the machine could give a skewed result, it was my duty to report it.

And yet. Many scientists greater than me had bent their principles to keep their jobs. Some said it was more a question of "when" than of "if." There were peer reviews and boards of ethics to watchdog the profession—was it really my job?

When the staff began to arrive for the day, I still had not slept, nor had I decided. I chugged a cup of coffee for concentration, tucked both papers under my arm, and went to see Connie.

Her hair was neatly pinned up, and she wore a white blouse with a blue pinstriped skirt and jacket. She greeted me with a cheery smile, as if she had slept soundly with nothing on her mind.

"Peter," she said warmly. Then she saw the papers under my arm. "Done already? My goodness, didn't you sleep?"

After the agony I'd been putting myself through, her manner shocked me. I suddenly saw my dilemma from her point of view, and I almost laughed. It was ridiculous, all this drama about a few isolated data points. Even Whittaker, whom I respected above anyone else I knew, had tried to tell me. What a fool I'd been.

Imitating her nonchalance, I said, "You know me. Can't stay away from the lab." I felt a huge sense of relief—I'd come so close to throwing away my career. I selected paper two from under my arm and tossed it on her desk.

She picked it up. "It's all here?"

"Everything you wanted."

"Glad to hear it." She examined my face, noticed my rumpled clothes from the day before. "Why don't you go home and get some sleep?"

"I think I will."

I walked to the door, a lightness in my step. The ordeal was over.

"Peter?"

I turned.

"I talked to Synthiac again. If we give sympathology our full backing, they've all but guaranteed us a multiyear grant." She waved the paper I'd just given her. "If this says what I think it does, it'll be in the bag. Not only that, but they're considering us for their Researcher of the Year award. That would be you—not *just* you, of course, but as the team lead, you'd be front and center. It's a monetary award, too, and though it's no Nobel Prize, I hear it's a significant amount." She smiled. "Just a little cherry for your sundae. Congratulations."

I stared at her, trying to process her words. My brain must have stalled for longer than I realized, because she chuckled faintly and waved her hand in front of my eyes. When I strode forward suddenly, she jerked back, startled. I took the paper out of her hands.

"Peter? Is something wrong?"

"Nothing at all," I said, swapping the paper with the one under my arm. "I just gave you the wrong report."

"I don't want to talk about it," I said.

Whittaker ripped off a meaty chunk of Philly cheesesteak, heedless of the Velveeta dripping on the table. "Do you regret what you did?"

"Not really. But I know what you think, and I don't want to argue about it."

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Whittaker chewed, then swallowed with an audible gulp. After a sip of iced tea, he said, "Permission to speak freely."

"No. Permission denied. That's what I'm saying. It's already done, and I don't want to hear what you think."

"Yes, you do. I was an idiot."

"What?"

"More specifically, I was 'too prejudiced to judge fairly.' Just as you said."

"Then—you don't think I made the wrong choice?"

Whittaker shook his head. "I *do* think you made the wrong choice. I think you unnecessarily delayed the full acceptance of sympathology into medical practice. But I'm embarrassed that I tried to get you to go against your conscience. I was too emotionally attached to the results and you called me on it. You stuck to your principles and preserved your respectability. You should be proud."

I sighed. "And for that, I'll lose my job." I remembered how cheerful I'd felt when I'd chosen the other course. "If I did the right thing, why do I feel so miserable?"

A corner of Whittaker's mouth twitched. As I watched, his lips curled and twitched again until he broke into a wide, involuntary grin.

"What is it?"

"I have news."

"What kind of news?"

He leaned forward and lowered his voice. "I've been invited to join the Glenn Research Center in Cleveland. NASA thinks sympathology is the answer to their remote medical monitoring problems."

I stared at him. "You're going to Cleveland?"

"I leave next week."

I set my sandwich back on my plate without taking a bite. NASA. Whittaker was going to work for NASA. I knew I should be happy for him—but couldn't he have waited another day or two to tell me? I had just dug my career into a pit, and now he was getting a chance I would have killed for. Glenn Research Center was the real thing—enough money to run a dozen full-time labs, cutting-edge research, the leading wave of humanity's bid for the stars.

"Congratulations," I said, trying to swallow my jealousy. I really was glad for him, and I couldn't think of anyone more perfect for the job. "Isn't the machine too big to be used in space?"

He pointed a finger at me. "Bingo. That's why it's a multiyear project. We need a miniature, spaceworthy device that can do just enough processing to signal to the ground. If we can do it, and show it to be reliable, it'll replace a dozen different devices they use today."

I started picking my bun into little pieces. "I suppose it will be important to NASA to know about the outliers in our results." The bitterness crept into my voice. I couldn't help it.

"Peter," he said. "That's not all the good news."

I tried to laugh goodnaturedly, but it came out wrong. "There's more?"

"Listen." He unfolded a sheet of paper from his shirt pocket, smoothed out the creases, and began to read. "'Given the importance of absolute reliability in space technology, we want researchers with an eye to detail, a commitment to thoroughness, and complete scientific integrity. As such, although first selection is yours, a board of senior staff members must review and approve each applicant.'"

The hair on my arms prickled. "You get to handpick your team."

He grinned at me. "They want someone with 'scientific integrity.'"

"Anybody you want."

He shrugged. "If I can find anyone suitable. Do you know anyone with a 'commitment to thoroughness'?"

"Tell it to me straight," I said.

He coughed into his hand and adopted an official tone. "Peter Atterley, despite your adamant refusal to agree with me on every issue, you are hereby of-

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fered a place on my staff at the soon-to-be-created Sympathology Lab at the Glenn Research Center in Cleveland, Ohio. And you're not allowed to say no."

I fell against the back of my chair and laughed for real this time, panting in relief. "You jerk," I said. "You strung me along."

He shook his head, his great frame shaking. "You should have heard yourself—'I suppose NASA will want to know about those outliers . . .'"

I didn't have any peanuts this time, so I threw my whole sandwich at him. Sliced meat and Velveeta exploded over his shirt and onto the floor. The manager came over to see what was the matter, and we couldn't answer him, we were both laughing so hard. When we finally apologized and walked out, leaving a 50 percent tip on the table, I put my hand on Whittaker's shoulder.

"Permission to speak freely?"

"Always," he said, returning the gesture. "Always." ■

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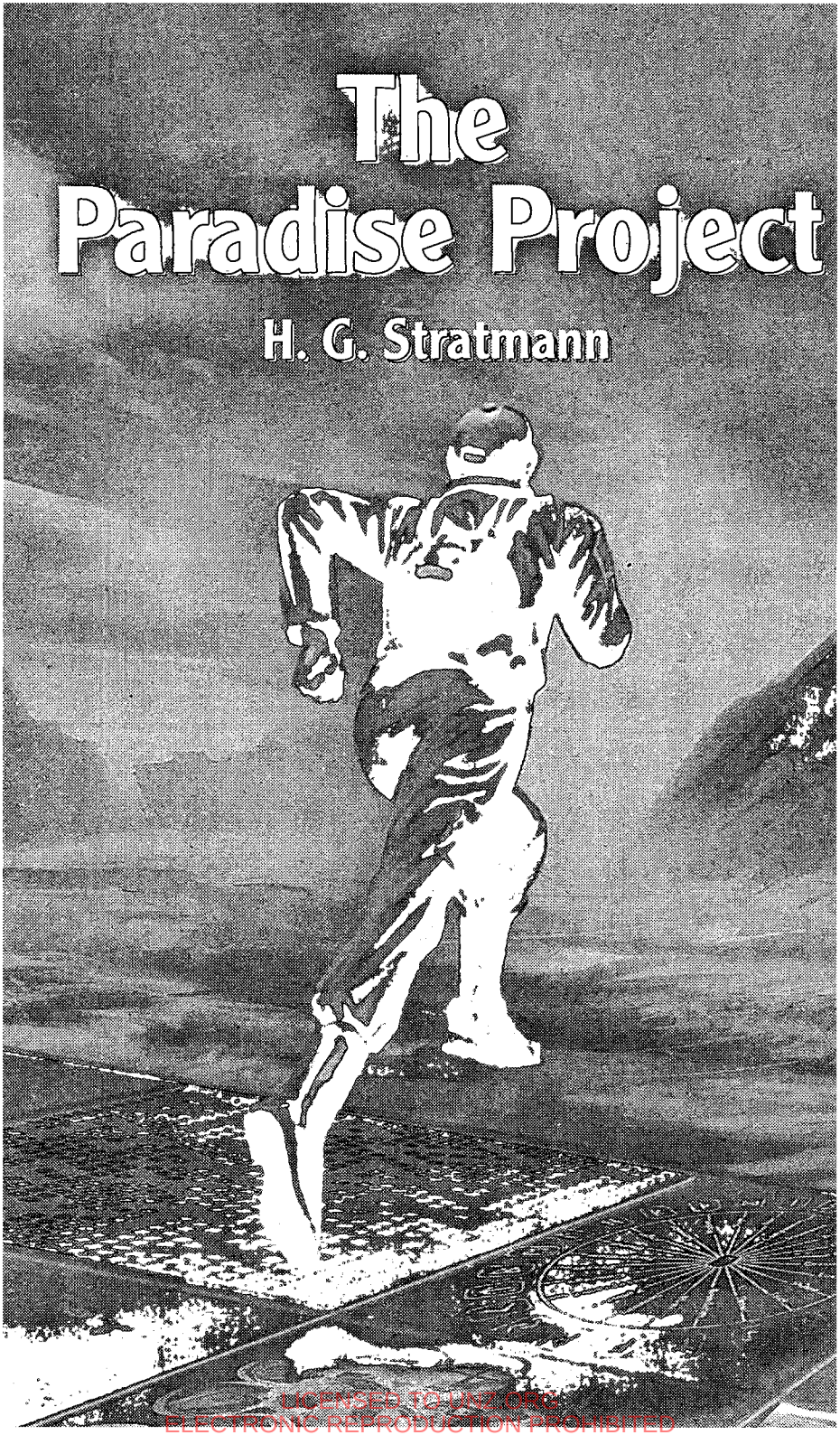
The Paradise Project

H. G. Stratmann



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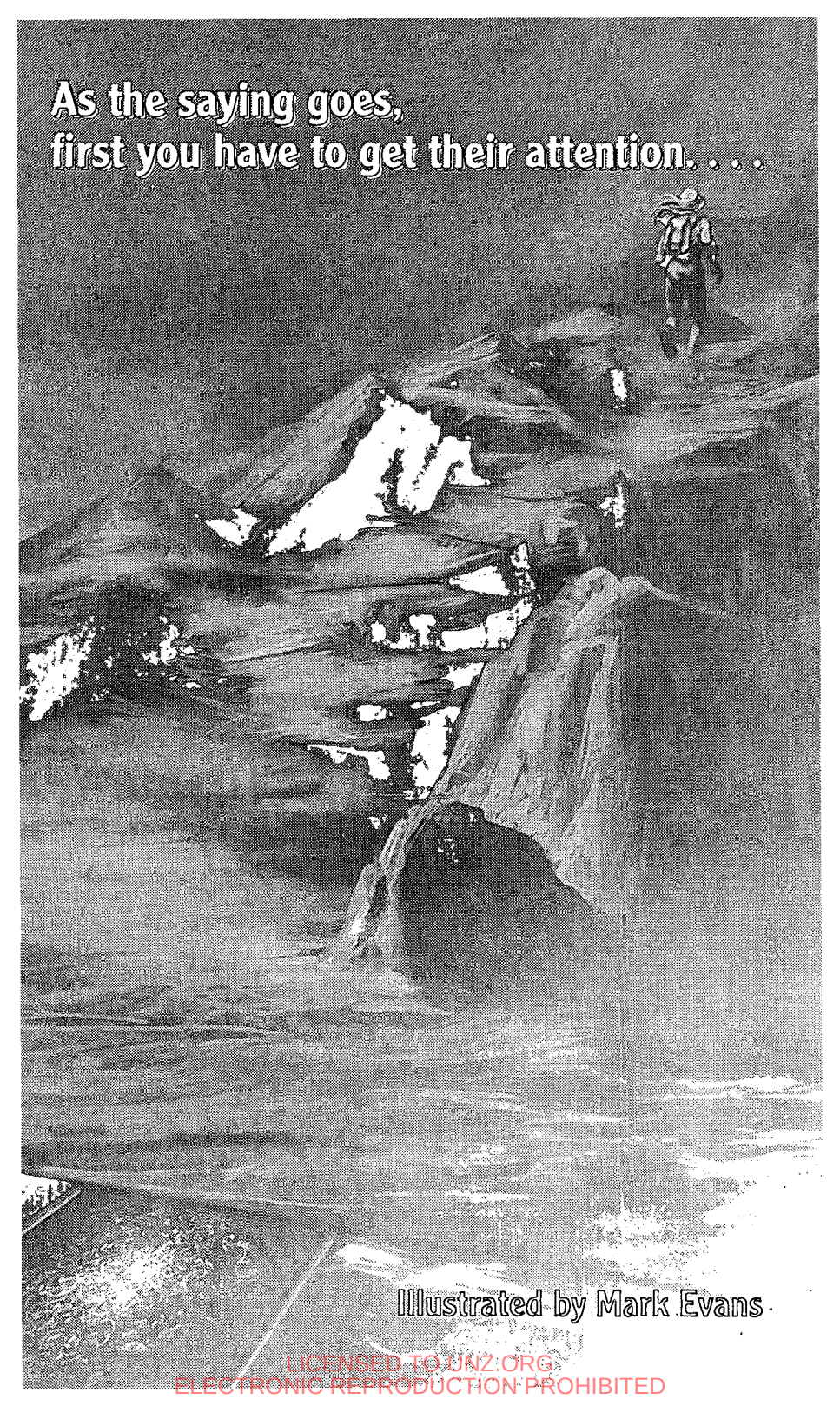

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"RUN!" Martin Slayton glimpsed the panic and fear on Katerina's face as she turned and ran back toward the habitation module. His startled cry "What's the matter?" went unanswered as her slim figure raced toward the rusty plain they'd just crossed.

Martin shivered as a cool breeze riffled his close-cropped black hair. The vast slab of steel-gray metal he stood on was even more unsettling and empty in the silence created by his fiancée's sudden flight. He frowned at the Cyrillic letters engraved in the alien metal at his feet, struggling to translate those words with the little Russian he knew. What message did they contain that could frighten Katerina into abandoning him?

Giving up, Martin scrutinized the other blocks of writing on the platform. Each of the nearby meter-wide squares etched into its surface like a gigantic chessboard contained words in a different language. If Katerina was right and this artifact really was a huge version of the Rosetta Stone, one of these squares had to be in a language he could read.

He stepped forward slowly, studying the squares—and then he spied the one in English. As his lips mouthed the words inside the square, Martin's expression twisted with fear and panic.

He ran.

Martin sprinted fifty meters before his boots leapt off the metal slab onto a patch of bare damp soil. He slipped and nearly fell before he regained traction and crunched onto rocky ground. His feet splashed through puddles of rainwater and trampled delicate lichenlike plants, fleeing from the unseen terrors spawned by his own imagination.

His lungs burning in the dry air and legs cramping, Martin finally saw Katerina's blue jumpsuit wavering far in the distance. His long strides brought him ever closer to her as the Sun, only slightly smaller and dimmer than seen from Earth, glared mockingly down on him from a rose-tinged sky.

Suddenly he was twelve years old again, watching a scary movie from the early 1950s about another twelve-year-old boy. Both of them were running from nightmarish monsters as a montage of memories flashed through their minds. The scent of death invaded Martin's brain as he remembered . . .

"I always wanted to go to Mars. I never thought Mars would come to me!"

A warm, wet Florida wind gently wafted Katerina Savitskaya's long auburn hair as she spoke, her hazel eyes elevated toward the clear moonless night sky. Her pose reminded Martin of Botticelli's "Birth of Venus." The aquamarine shorts and halter top wrapped around her nicely rounded thirty-two-year-old figure added only a modicum of modesty to the picture.

Martin, more conservatively attired in his light NASA uniform, handed his slightly shorter companion a pair of high-powered image-stabilizing binoculars. He said, "Let's hope we're seeing Mars even closer in three weeks."

Far away across the empty field, pale lights illuminated the towering Ares VII rocket. In two days it would fling both of them to a rendezvous with the fourth planet. He and Katerina had been earthbound since their trip to the Lunar South Polar base at Shackleton Crater in '33. Though six months overdue, this first manned mission to Mars was now ready to launch. The engineers had finally managed to modify the habitation module to set its two-person crew on a world radically different from the one for which the module was originally designed.

But Martin wasn't complaining. The time Katerina and he spent together more than compensated for the rigors of these last two years of training. Their interest in each other had long ago ex-

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ceeded the organizational need to maintain cordial relations between his NASA and her Russian Space Agency. They were both the same age, never been married, and in love with space and each other.

Not that they always thought alike. His opinion of the Russian Orthodox Reawakening of the '10s that had helped shaped her worldview was tepid at best. While he respected Katerina's religious beliefs, her old-fashioned moral standards played havoc with his libido. She insisted on waiting until this mission was over and a traditional church marriage ceremony when they returned to Earth before granting him the perks of a wedding night. But compared to the decades he hoped they'd have together to make up for lost time, another year was worth the wait.

In the still of the night Katerina gazed upward and focused the binoculars on a brilliant crimson beacon high in the heavens. Starlight glinted off the three-barred cross, nearly as long as her hand, that she wore suspended by a braided gold chain around her neck. Besides its long middle crossbeam, the heavy golden cross had a small horizontal bar near its top and an even shorter slanted bar close to its bottom.

Katerina's relic was a sacred heirloom several hundred years old, preserved and protected by her grandmother during the darkest hours of the previous century. The nonagenarian had thoughtfully sent the cross to her beloved granddaughter from St. Petersburg last month to help safeguard Katerina on her coming journey to a new world.

A smile flickered on Katerina's lips as she held the binoculars fixed on Mars. She murmured, "I think I can see the canals."

"I thought I saw them too. At least we have a better chance of being right than Schiaparelli or Lowell. They saw canals that weren't there. We know there really are ones now."

"Have you heard if the orbiters have spotted any new canals carrying water from the Boreal Ocean?"

"No. We can ask about it at the briefing tomorrow."

The scent of freshly cut grass wafted toward them from the field bordering the faraway launch pad. Katerina lowered her binoculars and whispered, "I wonder what the air will smell like on Mars."

"Probably bland. There's too little plant life and the humidity's fairly low. Unless the aliens decide to spray the whole atmosphere with a humongous can of air freshener to give it the scent of violets and lavender. Considering what they've done so far, I wouldn't bet against it!"

Katerina smiled back at him. Now they could afford to joke about Mars. But ten years ago, in the year 2025, the Earth seemed on the eve of destruction.

At first the public ignored or laughed at the frenzied reports radiating from observatories and space agencies around the world. A planet leaving its orbit and spiraling sunward toward Earth? That only happened in cheap sci-fi. In real life it could only be a prank by a twenty-first century version of Orson Welles.

But as years passed and that ruddy glow in the sky gradually blazed ever brighter like a plunging fireball, humanity could no longer doubt the evidence of its own eyes. Few people were reassured by the experts who'd calculated that the runaway world wouldn't collide with Earth. Even when Mars gently settled into its new circular orbit 157 million kilometers from the Sun, a mere seven million kilometers farther than Earth's average distance, the riots and apocalyptic panic continued. It was a long time before it dawned on an emotionally exhausted human race that doomsday really was postponed.

The unknown force that repositioned the fourth planet also dragged its two tiny moons and small retinue of orbiters along for the ride, adjusting their orbits appropriately as Mars underwent a

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miraculous metamorphosis. Month after month orbiters both old and newly arrived beamed back astounding pictures of a lifeless world laboring to be resurrected.

But the violent changes on the planet's surface could only partly be explained by natural means. Both polar ice caps melted far quicker than predicted from the greater warmth of the Sun alone. In the vast lowlands of the northern polar region, the Boreal Ocean formed and sent liquid water cascading into ancient riverbeds. The frozen carbon dioxide blanketing the south pole rapidly sublimated, allowing the water ice beneath to melt and flow into the highlands and craters of the southern hemisphere.

Other changes went even further beyond any known areology. One day a weblike pattern of deep furrows began to appear, as if an invisible giant as large as Voltaire's Micromegas was running its fingertips through the soil. Data from the orbiters suggested those furrows were created by a focused beam of intense heat from some unknown source slicing through the planet's crust, vaporizing its nitrate-containing rocks and liberating nitrogen and oxygen into the atmosphere. Soon these "canals" crisscrossed the planet, bringing water from both the Boreal Ocean and the crater lakes of the south to its parched lands.

Later, patches of green streaked the Martian landscape, as if unseen hands were planting a garden in its newly moist soil. But no earthly plant could use carbon dioxide rapidly enough through photosynthesis to account for the huge quantities of free oxygen flooding the planet's atmosphere. And no known science could explain how the planet's gravity and magnetic field had changed.

Humanity gradually accepted in awed wonder what was happening to its new next-door neighbor in space. But the great questions of "how" and "why" it was happening remained unanswered.

Katerina sighed. "Why do you think the aliens haven't shown themselves yet?"

"Maybe they're just modest."

"Martin, be serious!"

"Okay. Humanity is beneath the notice of aliens whose technology is so advanced they move planets as easily as we use a bulldozer to move a mound of earth. Have you ever introduced yourself to the inhabitants of an anthill?"

"But they must know about us. Otherwise, why would they make Mars such a perfect place for humans to live?"

Martin frowned. "It worries me that what you said isn't quite true. I don't understand why, if our shy aliens really had us in mind, they didn't fully terraform the planet. If they can somehow alter a whole world's gravity, why did they increase it to only 0.91 g and not make it the same as Earth's?"

"Perhaps that's to give us a little spring in our step when we run. Besides, that level of gravity is enough to minimize any bone or muscle loss. And it makes it a bit easier to take off from Mars."

"Maybe. But they also didn't get the atmosphere quite right either. The carbon dioxide level is okay, but there's a bit too little nitrogen and the atmospheric pressure at 'sea level' is only 95 percent of what it is on Earth."

Katerina laughed. "But the percentage of oxygen in the atmosphere is 25 percent—high enough to make the partial pressure of oxygen similar to what we're breathing now!"

She rumpled his hair. "Martin, sometimes you're too skeptical. What's that expression—'You shouldn't look a gift horse in the mouth.' These aliens have reduced the orbital energy and angular momentum of Mars by astronomical amounts. They've turned the planet from a waterless wasteland with a thin unbreathable atmosphere to one nearly as nice as our own. They've given it an ozone layer and a magnetic field strong enough to keep us safe from ultraviolet rays and solar radiation. They were even

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thoughtful enough to create north and south magnetic poles so we can use a compass. And you're complaining that they didn't get things 'right' down to a few decimal places!"

Her fiancée brushed his hand forward across the top of his head. "I still wonder, though. What's in it for them? And what if they don't want any uninvited guests?"

"After all the good they've done, you still think these aliens might be hostile? If they were, they could have swatted Earth into the Sun as easily as one of those baseball players you like so much hits a home run!"

Katerina shook her head. "I think the reason we haven't seen the aliens yet is that they're expecting us to show how interested we are in what they've done. They want to see if we're willing to make the effort to go to Mars and visit them."

Martin gazed across the field at the brightly lit rocket. "I hope you're right. And I'm glad enough people in the world agree with you."

Katerina took his hand and clasped it tightly. Far above them the starry heavens listened patiently to their questions, but kept its secrets hidden behind a silent twinkling smile. Martin's eyes drifted to Venus. The second planet hung high in the west, its familiar golden brightness unchanged from his childhood. Unlike Mars, that world seemed a beacon of normalcy in a changing solar system.

Except it wasn't. Whatever unknown power had remodeled Mars had also elected to send Venus drifting out to a new orbit 143 million kilometers from the Sun. Despite its dramatically closer distance to Earth, the planet was no brighter because its crushing carbon dioxide atmosphere and sulfuric acid clouds were dissipating and reflecting less sunlight. No one could explain where the vast quantities of hydrogen needed to start the torrential rains drenching its cooling flat surface had come from, or how so much oxygen was being liberated. Nonetheless, the instruments on the Vespucci orbiter clearly showed the shallow ocean of scalding but liquid water covering most of its previously searing arid landmass.

Those same superhuman forces had also made Earth's sister world spin like a tilted top with a new day just over twenty-five hours long. Though none could predict exactly how long it would take, someday a reborn Venus would be as hospitable as the new Mars was now and ready for human exploration.

Martin sighed. That adventure was for another time and another crew. He and Katerina had their own planet to worry about first. . . .

The wind shrieked by Martin's ears like the wordless chorus of Invaders from Mars. *Pain lanced through his chest with every panted breath as he ran, too terrified to glance back at what might be pursuing him. Visions of the recycled Martian war machines from* Robinson Crusoe on Mars *swooping down at any second made his back prickle, waiting for the searing caress of a heat ray to incinerate him.*

Maybe, if they could reach the return vehicle in time, there was an infinitesimal chance they might get back into orbit again before it was too late. As he slowly gained on Katerina's speeding figure, Martin prayed that at least she would survive long enough to tell their tale. Though their own lives might be lost, if she could only warn their fellow humans never to come here again, perhaps there would be no more dying.

Martin's boots pounded the dust of what might be his grave, his nostrils clogged with the sickening smell of a funeral wreath. His eyes caught the sunlit glint of metal in the distance. Not much farther now—

A horrifying thought made him stumble. He righted himself just in time to avoid tumbling into the sand and kept on running. What if the habita-

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tion module Katerina and he were fast approaching was no longer a safe haven? Maybe, just as hope was daring to trickle back into their hearts, some thing *was already there—waiting patiently to hear their final screams.*

Somewhere behind him in the distance a brass band seemed to play a faint, heavenly tune. The music in his mind turned ever more dissonant, swelling ever louder in a glacially slow crescendo like a distorted symphony by Charles Ives. No matter what was waiting for them ahead, there was no turning back. . . .

"What is that thing?"

Martin floated over and squinted at the tiny dark blur Katerina pointed out on the monitor. He shrugged. "I don't know. But it certainly wasn't there before we entered orbit."

His crewmate tapped on the keyboard secured in front of her. "Let me see if I can enhance it."

The set of cine images they'd just received from the high-resolution camera on the Mars Scout Orbiter froze into a still frame. Katerina zoomed in on the mysterious object and superimposed a calibration grid over the image. She said, "Whatever it is, it's big—about a hundred meters square. We'll have to get radar readings to see how tall it is, but it seems fairly flat.

"And it's about three kilometers south of our landing site."

Martin shook his head. "Somehow I doubt the fact it's appeared at that location is a coincidence."

He gently pushed himself toward the other side of the craft, peering down through a viewplate. A gibbous Mars wheeled slowly beneath them some four hundred kilometers away, its canals and narrow rivers glistening in the sunlight. Their soon-to-be landing site at 39° 8' N and 84° 30' W was nearly directly below, not far from towering Olympus Mons and the shore of the shallow Boreal Ocean. He squinted but couldn't spot the mystery object nearby.

Martin sighed. Soon it would be time to earn his pay. So far their mission had gone almost exactly as scripted. They roared off the launchpad into a cloudless cerulean sky, silently exulting as the view through the cabin window turned black and their bodies struggled against the restraints that kept them from floating free.

As their craft raced away from Earth, it was comforting to know that souvenirs of the home planet waited patiently for them at the other end of the journey. A fully fueled Mars ascent vehicle using the latest single-stage-to-orbit technology sat on the dusty plain near their landing site. That vehicle had used an aerobrake and parachute system similar to the one they would employ to land the habitation module that was their home for the next year.

When their sojourn on Mars was over, the ascent vehicle would blast them back into orbit. There it would rendezvous with the waiting Earth-return vehicle for the homeward trip to the Lunar South Polar base. After weeks of medical tests in quarantine to make sure they didn't harbor any alien pathogens acquired during their stay on Mars, they would finally get a hero and heroine's welcome on Earth.

But all that lay far ahead. After the exhilaration of the launch, the next two weeks of their flight were mostly routine, even boring. There were hours of exercise on the small treadmill, brief meals, and restless "nights" of dreamless sleep. Routine maintenance on their vessel, periodic communications with Earth, and observations of the rapidly waxing ruddy orb that was their destination filled most of their days.

The only real trouble they had during the flight was manmade. It happened during a press conference held a week before they reached Mars. The time delay between sending and receiving signals over millions of kilometers made holding real-time question and answer

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sessions difficult but doable. A minor TV news anchor, apparently interested in boosting his ratings, started with a seemingly innocent query about how they spent their free time in space.

Katerina replied, "We really don't have much free time. I like to read romance novels and books on philosophy, while Martin prefers science fiction. He also brought along a collection of old movies about Mars and Martians that he's wanted me to watch with him. I told him I'd do it if he let me play my classical music over the ship's intercom system. His tastes in music are strictly twenty-first century, but at least I'm getting him to tolerate my favorite twentieth century American and Russian composers. By the time we reach Mars, he'll be an expert on Hovhaness, Ives, and Shostakovich."

After a long delay they heard a snicker. "That sounds so intellectual. I'd expect a healthy young engaged couple like you to entertain each other in a more physical way. You two have been compared to the new Adam and Eve, and they were given a divine command to 'be fruitful and multiply.' Besides, everybody knows what goes on in those orbital motels—"

The transmission suddenly cut off, mercifully ended by some alert individual at Mission Control. Martin looked at Katerina. Her face was redder than the planet they were approaching. She muttered a furious stream of words in her native language that would have heated their idiotic interlocutor's ears if he'd heard them.

Martin discreetly said nothing. Learning foreign languages wasn't his forte, and he'd never been able to achieve more than a rudimentary ability to speak and read Russian. But he had enough imagination to translate what Katerina was saying into their pungent four-letter Anglo-Saxon equivalents.

She probably only felt insulted, while those snide insinuations about their personal lives only made him feel depressed. The embarrassing truth was that their love life was currently confined to handholding and an occasional chaste peck on the cheek. Katerina's religious beliefs were strong enough to keep her firmly virginal for now. He loved her too much to pressure her into doing anything she didn't want to do.

And there were pragmatic reasons for keeping their physical relationship nearly platonic for the time being. Whenever some lustful fantasy started to percolate up in his brain or elsewhere, all he had to do was remember those mandatory NASA "Thou shalt not!" lectures to squelch it. He recalled the bullet points all too well.

No form of birth control short of sterilization is 100 percent effective. A pregnancy on your mission would be a disaster. He couldn't argue with that. By necessity their medical training and resources were limited—enough to take care of the expected range of minor injuries and emergencies but not any obstetrical ones.

Your cumulative radiation exposure in deep space will be far less than on the six month-plus voyage to Mars originally planned in the last century. However, it is still great enough to temporarily damage your sperm cells and produce potentially serious mutations in offspring. It was some consolation that the family jewels would be at full health again several months after their time in space was over. But for now they had to stay in cold storage.

Someday, if you prove that Mars is a safe place to live, it will be natural and necessary for men and women to conceive and deliver the first babies born on a new world. But that time is not *on this first mission*. All right, he understood the difference between being an explorer and a colonist. Perhaps, if Katerina and he lived long enough, they could be both.

Remember that incident on the International Space Station in late 2020. People who seemed just as professional

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and competent as you let their sexual urges outweigh their judgment, with disastrous results. Hearing the details of that public relations fiasco and its terrible consequences for the individuals involved was a powerful warning for anyone wanting to stay in the space program.

Sometimes those cautionary sex-ed classes for space travelers seemed to border on the scare tactics he'd heard were once used in midtwentieth century high schools. Still, Martin was grateful to the person who gave those lectures. That well-respected physician had convinced the Russians to keep Katerina on this mission when they discovered she and Martin were engaged. The Russian Space Agency wanted to replace her, arguing that their personal feelings for each other might disrupt and endanger the mission.

The head of NASA's space medicine program used his considerable influence and reputation to dissuade the RSA. That cardiologist told its officials he trusted Katerina and her husband-to-be to act strictly like professionals on the mission. The Russians accepted his advice as authoritative. They knew that, on the subject of sex in space, no one had more expertise than Dr. Alexander Stone.

After their aborted press conference, Katerina seemed unusually moody. When Martin woke up from his next sleep period he found her in the science lab, praying in front of several flat colorful icons. They were attached by sticky magnetic strips on their backs to the metal door of the small locker where she stored her collection of books and personal items. Lively choral music played softly in the background as she floated in the lab, hair streaming behind her like an angel descending from heaven.

Katerina kissed the icon representing her namesake, the wise and persuasive Saint Catherine of Alexandria. Finally, after ritually using the first three fingers of her right hand to touch her forehead, breastbone, right shoulder, and left side, she finished her solitary ceremony.

Martin moved quietly toward her. "Are you all right?"

Katerina wheeled slowly around to face him. "I'm not sure."

His next question was an awkward attempt to change the subject. "I like that music you're playing. What is it?"

"Haydn's oratorio *The Creation.*"

Katerina turned a troubled look toward him. "Martin, what if there *aren't* any aliens?"

"What do you mean? Planets don't change orbits and terraform on their own!"

"Of course not. But what if, instead of aliens, the power doing it is actually . . . divine."

Martin rolled his eyes. "Don't tell me you're buying into what those crackpot religious groups were saying when we left—that what's happened to Mars and Venus is the ultimate proof of 'Intelligent Design.' The 'Hand of God' reaching down from Heaven and creating a new Eden or two for us. *They're* calling us the new Adam and Eve too. Not that I'd mind it too much if you didn't, but when I get to our Martian 'paradise' I intend to keep my clothes on. And it's a good thing I don't like apples!"

His smug smile disappeared. The glare on his crewmate's face told him he'd been too sarcastic with his skepticism.

Katerina floated away from him. "Don't be so pompous! If you don't believe in miracles, you won't recognize one when you see it! I think we probably will find aliens waiting for us on Mars. God almost never breaks the laws of nature He created, and He only does it then when it's for a very special reason.

"But perhaps God is using the aliens as His instruments to help us save ourselves. With all the terrible things we humans are doing to Earth and to each other, maybe we're being given a second

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chance to do things right. Colonizing Mars won't directly solve problems like war, global warming, or overpopulation. But, if we're careful, it can be a symbol of how humanity can work together and inspire us to be much better than we seem."

Martin lowered his voice diplomatically. "Well, if I'm willing to believe in aliens with godlike powers, maybe I shouldn't be so critical if you take it a step further and think a real deity is involved. And I agree that whatever happens when we get to Mars will be a turning point in history."

His eyebrows arched. "I can't believe I said that. It's a scary thought—that what the two of us do could make or break the human race."

His fiancée's eyes softened. She eased back toward him and planted a delicate kiss on his cheek. "Have a little faith, and I think we'll do all right . . ."

Her voice murmuring again beside him snapped him back to the present. Katerina said, "The radar readings are in on that . . . artifact. There's no way to tell how far down it goes into the ground, but it's only about ten centimeters higher than the terrain around it."

She rubbed her chin. "Maybe it's a platform of some kind, or the top of a huge underground building. It's even big enough to be a landing pad for us or . . . someone else."

Katerina sighed. "We'll see what the experts back home think about these images and readings, and what they want us to do. What do you think that structure down there is, Martin?"

He stared at the monitor uneasily.

"Let's hope it's a welcome mat."

"Katerina!"

Martin tried to shout a warning to her as she veered toward the habitation module instead of the ascent vehicle. But his cry emerged as only a dry rasp from a throat parched from continuous exhausted running. He watched helplessly from a hundred meters away as she entered the module. His ears strained to hear her screams as he forced his body onward.

But even if he reached her side, what could he do to save her? They had no weapons, no means of defense. To creatures powerful enough to move planets, the effort needed to destroy a human body was minuscule. The lives of Katerina and him must be no more than motes of dust to such beings—too insignificant to be even noticed when those lives were brushed out of existence.

At least the two of them could die together—a tiny consolation, but the only one they might have . . .

"Zubrin Base established. Habitat One, the first human dwelling on Mars, has landed!"

Martin unbuckled his restraining straps and waited excitedly for a few seconds as Katerina did the same. Wobbly from their first taste of near-normal gravity after three weeks, they hugged and kissed in a brief whirling dance around the cabin.

Finally remembering the wall-mounted surveillance camera transmitting their every action back to billions of people on Earth, they disengaged and resumed a semiprofessional demeanor. But before they did, Martin whispered in his fiancée's ear, "Won't that give the media something to write about!"

They quickly did a check of the habitation module's systems and looked for any signs of damage within the interior. The module, based on a classic design, was shaped like a large tin can about nine meters in diameter and five meters tall. It contained multiple wedge-shaped compartments on two decks, including a science lab, storage areas for food and equipment, and a communications center. A narrow central cylinder with small doorways and metal rungs allowed easy access to every section.

Then, as the world watched with nearly a minute's delay, the two of them

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prepared to step into history. After releasing several latches, Martin turned a small crank that made the external hatch pivot downward at its base. When its far end touched the ground the hatch served as a ramp allowing easy passage between the module, elevated a meter above the surface on multiple stubby landing legs, and the outside.

NASA and the Russian Space Agency had argued for months about which of their members should be the first to set foot on Mars. They couldn't agree whether the nation who'd first landed a craft on Mars or the one that had taken the first close-up pictures of the planet would have that honor. Neither wanted to risk a simple coin toss to decide.

Finally they chose the easiest method possible. At the count of three, with their arms locked, Martin and Katerina made a brief simultaneous jump from the far end of the ramp onto the surface. Together they both solemnly intoned their single scripted line.

"Humanity has a new home."

Then, their duty to their employers and posterity done, they reserved a mystical moment for themselves. Standing hand in hand on the rusty soil of Mars, they surveyed their surroundings with childlike wonder, soaking in its awesome sights. All around them in the brightening Martian dawn, across the panoramic rock-strewn ochre plain to a disorientingly close horizon, there was a solemn silence. No rustle of the wind through trees, no chirping of birds—it was as if they were the only worshipers in a great empty cathedral. A faint warm breeze, puffing gently like the bellows of an ancient organ, completed the sacred ambience.

It seemed fitting that the first spontaneous words by a human being standing on the surface of Mars should be a song of praise to the divine. A lilting soprano voice gently sang, "A new created world springs up at God's command."

The second extemporaneous sentence was scored for a considerably less melodic baritone. "What do you know, the air really does smell a little like violets and lavender!"

They completed their checklist of other scheduled tasks as quickly as possible. After shutting off the internal surveillance cameras to conserve power and visually inspecting the module's exterior, they trotted half a kilometer to the north where the Mars ascent vehicle rested. The once white exterior of the craft, shaped like a blunted cone pointing toward the heavens, was covered with a fine coating of reddish dust. Its outside hatch squeaked in a pitiful plea for lubrication as Martin entered the vehicle.

After temporarily powering up the main console, he quickly tested the craft's systems and checked the fuel pressure readings. Satisfied with the results, he emerged back into the sunlight and locked the hatch. He grinned when he saw Katerina. She was gazing dreamily at the horizon, her long hair rippling alluringly in the warm Martian breeze.

That gorgeous avatar of Dejah Thoris turned and smiled coyly at him. "I still can't believe we're really here. It's magical—like we're living in a fairy tale."

The expression of awestruck innocence on Katerina's face made Martin's heart ache with love for her. Then he shook himself back to reality. He grunted, "You're right, but let's not get too carried away. We still have a job to do."

He turned around and ran his index finger over the Martian dirt covering the high-tech spacecraft's exterior.

Katerina peeked over his shoulder—and laughed at what he'd written.

WASH ME.

The two of them held hands as they retraced their steps. As a beaming Sun reached its zenith in the coral-tinted sky, they reentered the habitation module and had a quick lunch of semitasty dehydrated food together. Then they prepared for the only task not on their original schedule.

While Katerina went to radio Mission Control for final instructions, Martin

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tested the handheld transceiver that would maintain their radio link to the module. The latter's transponder would relay the transceiver's signal to an orbiter and from there to Earth.

Katerina rejoined him near the open module's hatchway. Her heavy cross dangled from the gold chain she'd just fastened around her neck. She flashed the precious golden band of diamond-studded jewelry on her left ring finger at Martin and said, "I'm so happy my engagement ring fits me again. I hated not being able to wear it on the trip here because my fingers were too puffy. Its amazing how a few hours out of microgravity can shift fluids from your upper body back to your legs, where it belongs!"

"My ring probably fits again too. Do you want me to go put it on?"

Katerina shook her head. "No need to do that. I'll be with you to fight off any little green Martian hussies we meet who can't see you're already taken!"

She slipped her right hand into the grip strap of a video camera and checked its battery status. Then, as they walked back into the welcoming afternoon sunlight, Martin said, "It's over three kilometers to our target. Do you want to unpack the rover from the module? I'll even let you drive."

"No, assembling and prepping it would take several hours. It'll take us less time to walk, and I want to find out what that artifact is as soon as possible. Besides, it's such a beautiful day!"

They set out toward the south at a brisk pace. At first the silence around them, broken only by the crunch of their footsteps, was vaguely unnerving. But soon Martin let himself be soothed by the enchanted world around them. As their hike continued, he almost expected Tweel to come leaping over a nearby mound of sand and land on his beak beside them, or to see a distant cloud of dust as a thoat galloped by.

Every few minutes Martin unclipped the transceiver on his belt and keyed it to send a brief continuous wave signal in Morse code back to the habitation module. It was just enough to let the folks back home know they were safe. A few brief answering tones from the transponder at the module confirmed their signal was received.

It wasn't long before they encountered their first alien life-form. The small plants scattered beneath the shadow of a low rocky ridge were scrubby and a sickly shade of green. On Earth they would have been mistaken for a common weed and never given a second look.

Katerina turned on the video camera and recorded the small patch of vegetation from multiple angles and distances. Meanwhile, Martin bent over and dug his hand into the loose moist soil. The light umber-colored dirt sifting through his fingers didn't look too much different from the kind he'd harrowed as a child growing up on the family farm in the Missouri Ozarks.

The former country boy thought of the packets of seeds for beans, corn, and wheat back at the habitation module and dreamed of vast fields of crops swaying in the breeze. He chuckled at a vision of his future self wearing blue bib overalls and holding a pitchfork while Katerina stood beside him in her gingham dress, looking out together over their Martian green acres.

Katerina knelt down beside the present day's lonely bit of greenery, brushing it gently with her palm. Then she shook her head and stood up. "We can collect a specimen on the way back, Martin. These plants obviously aren't native to Mars. They must have been planted by whoever did the other landscaping on this planet."

A disturbing thought popped into Martin's mind. "I wonder if the aliens introduced any animal life here too."

Katerina fingered the gold cross hanging from her neck. "If they did, let's hope we see it before it sees us—and that it isn't too big and hungry."

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They encountered several other types of small mossy and lichenlike vegetation as they cautiously continued their odyssey. Martin became so absorbed in scanning the plain for any other signs of life, either flora or fauna, that for several minutes he didn't realize they had a serious problem.

He stopped. "Wait a second."

Katerina turned around. "What's wrong?"

Martin pressed the transmit button on the transceiver again. Only a faint crackle of static came from it in answer. "We've lost contact with the module."

He switched to voice mode. "Mission Control, we are en route to the artifact."

He glanced at the combination watch-compass-pedometer on his wrist. "Current position is 1.62 kilometers due south of the habitation module. Please confirm reception."

They waited anxiously as his watch soundlessly counted the seconds. As it neared the minimum time of nearly two minutes before they could expect a reply, he and Katerina held their ears close to the transceiver.

Four minutes after his transmission, Martin repeated the message. Again they waited.

Five minutes later, as they listened to the soft static hissing from the transceiver, a faint wind rustled their matching blue jumpsuits and blew a light patina of dust over their boots. A cooling shadow fell over them as the Sun, slowly sinking toward the horizon, slid behind the only cloud in the sky.

Katerina whispered, "What do you think the problem is?"

"I don't know. The transceiver seems to be working. There might be something wrong with the transponder back at the habitation module—but that could be anything from a circuit board going bad to aliens pushing the power button to 'Off.'

"Whatever's wrong, we're out of contact with Earth."

Small orange-tinged rocks crunched beneath Martin's boots as he paced in a small circle. He muttered, "The safe thing would be to go back to the module. That's what our bosses would want us to do. But if we're not willing to take a calculated risk for a good cause, we shouldn't be here. Think of all the astronomical discoveries that would never have been made if NASA hadn't reversed its decision to cancel a last service call on Hubble thirty years ago."

Katerina interrupted his soliloquy. "And the stakes here are so much greater. I think we should keep heading south toward the artifact."

Martin stared down at his feet uncertainly. Finally he whispered, "Let's do it."

They moved slower now, alert for any signs they weren't alone. Martin periodically stopped to try the transceiver again, pointing its stubby rubber ducky antenna back in the direction of the habitation module. Every attempt brought only increasingly louder bursts of static from the transceiver as they neared their goal. Katerina used those brief pauses to sweep her video camera slowly across the landscape, making a record of their journey to upload back to Earth when they returned to the module.

They spotted the edge of the artifact when it was about fifty meters away. Martin grabbed Katerina's arm and stopped her. He whispered, "Wait. That thing could be dangerous. Maybe only one of us should investigate it, while the other one stays here and records what happens."

Katerina gently disengaged his hand. "Since I'm the one holding the video camera, I won't ask who you had in mind for the dangerous job. We can either stand here arguing all day about who does what or just keep going together. Which will it be?"

The withering look on her face quickly decided the issue. They pressed onward together.

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The soil bordering the artifact was suspiciously flat and smooth. The landscape they'd just traversed had been littered with sharp rocks ranging in size from tiny pebbles to a few as big as basketballs. But all those rocks were missing within a straight swath of ground extending about ten meters out from the extraterrestrial object's edge. Looking down at that bare area around the artifact, Martin remembered he'd once compared the aliens' ability to move planets to humans using a bulldozer. Here, it looked like the aliens had used a conventional-sized bulldozer themselves to clear and level the ground—but one that didn't leave any track marks behind.

Their footprints pressed softly into the bare damp ground, dotted with small mud puddles, as they cautiously approached the artifact. When they reached its edge, Katerina panned her video camera along the closest section of the artifact while Martin studied the steel-gray metal's glassy flat surface. The object was larger than a football field. An eyeball estimate confirmed their radar readings from orbit that it was about ten centimeters thick. A series of shallow parallel grooves etched into its surface divided it into squares about a meter on a side, in a pattern resembling a checkerboard.

Most of the squares near the edge of the artifact contained wildly different sets of symbols and colorful abstract pictures. One square held a series of fluorescent orange marks in a spiraling pattern that could be part of an alien alphabet, while the ones adjacent to it held what looked like entirely different letters in a rainbow of clashing colors. Scattered squares held intricate, vertigo-inducing geometric patterns that, Martin thought, resembled pictures he'd seen of crop circles.

Several squares seemed blank. When he squinted at one of them closely, however, it contained faint lettering he suspected would be much brighter if viewed under ultraviolet light. Another empty square actually seemed to produce a faint scent that changed with every cautious whiff he took. One moment it had the aroma of baking bread, the next a fruity perfume, then the repelling smell of rotten eggs. A third square produced a faint musical warble at the very upper edge of human hearing.

Martin looked up from his perusal of those peculiar squares to see Katerina edge closer to the artifact and raise one boot—

"Don't step on it!"

He grabbed Katerina's jumpsuit from behind near the base of her neck, nearly pulling his crewmate backwards into an undignified tumble onto her backside. She steadied herself against Martin, then turned around angrily. "Why not, Martin? Do you think it's booby-trapped? If the aliens were hostile, they're so powerful they could have destroyed us long ago. They don't *need* to resort to a complicated trap like something from one of your Flash Gordon serials!"

Martin started to defend those classic science fiction movies he'd shown her on the trip here as more helpful than she gave them credit for. But the expression on her face told him she wasn't in the mood for him to point out that the artifact resembled a giant-sized dark monolith lying on its back.

Instead he replied, "This thing may be dangerous even if the aliens don't mean to deliberately hurt us. Maybe it's some kind of machine that generates a force field or an electrical charge, like a high voltage transformer, that's strong enough to electrocute whoever touches it. For all we know, it could be a teleportation device that's activated when you stand on it. The place you'd wind up might not have a breathable atmosphere or could kill you in some other way."

Katerina looked at him dubiously. "Let's see if you're right."

She walked back across the bare area of ground and returned with a baseball-sized rock in her hand. Before Martin

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could speak she threw it like a fastball across the artifact. It skidded along the metal surface and came to rest.

"What did you do that for?"

Katerina shrugged. "Well, at least the rock didn't disintegrate or set off any alarm bells."

"At least none that we can hear! I—"

He stopped, looking at the rock. It was slithering rapidly back toward them across the surface of the artifact. A few seconds later, the stone plopped gently to the ground at their feet.

Both of them took a step back from the once again inanimate rock. Martin cautiously examined the suspiciously pristine surface of the artifact. He said, "Maybe it generates some kind of electrostatic field to keep it clean and free of dust and debris. Or maybe it has an electromagnetic field and the rock was ferromagnetic enough to—heck, I don't know what happened!"

He turned his transceiver back on and turned down the squelch control. A loud burst of static erupted from its speaker. The static grew softer and louder as he slowly swept the transceiver's antenna from side to side in the direction of the alien metal.

Martin said, "Whatever this thing is, it's generating an electrical field. That's why we lost contact with the habitation module. Something on this artifact is producing so much electromagnetic interference we can't get a signal to or from the transponder back at the base. Funny thing is, the source of the interference across this artifact is spotty—stronger in some directions than others."

"Why is that?"

"I don't know. Maybe there's more than one power source on or beneath its surface."

Martin set the transceiver to scan through a wide range of frequencies and signal modes. Between 824 MHz and 894 MHz its speaker emitted a variety of low, warbling signals like an ancient theremin. Scanning lower through the UHF and VHF bands produced a cacophony of similarly strange, modulated sounds.

He turned the transceiver off and clipped it to his belt. "I wonder if there are transmitters buried under some of these squares."

"Why would the aliens do that?"

"Well, unless we go for a stroll out on this thing, we'll never find out."

He sighed, thinking aloud again. "The safest thing to do is to go back to the module and bring back our multimeter, high voltage probe meter, and a short metal rod. Then we stick the rod into the wet soil here, clip the high voltage probe's ground lead to the rod, and touch the business end of the probe to the surface of the artifact. That should complete the circuit and give a rough reading of how much voltage is running through this thing.

"If the reading is low enough, we use the multimeter to get more accurate measurements of how much voltage and current is present. It's the only way to tell if this alien contraption has enough power running through it to fry us if we touch it and get grounded somehow."

Katerina shook her head. "No. If we go back to the module, you'll feel obligated to check with Mission Control about what to do next. It's their duty to be cautious and keep us safe. While they're taking hours or days to decide what's the least dangerous thing to do, you'll do your duty by waiting for their decision.

"And while all of you are doing the 'right' and prudent thing, we'll be wasting time and accomplishing nothing. I can't prove it to you, but I feel we'll regret it if we don't find out as soon as possible what this platform is and why the aliens put it here."

Katerina handed Martin the video camera, then unclasped the gold chain around her neck. She slid the golden three-barred cross down to one end of the chain and carefully made a small loop enclosing the relic. Slipping her en-

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gagement ring off her finger, she tied it to the other end of the chain. Then she knelt down beside the alien artifact and stuck the bottom end of the cross into the soft wet soil.

Martin wrinkled his forehead. "What are you doing?"

With the cross fixed securely upright in the soil like its archetype on Calvary, Katerina stood up. She said, "You're not the only one who's had training in electrical engineering. Gold is an excellent conductor of electricity. My cross acts as a ground, so to see if there is high voltage in this alien metal all I have to do to complete the circuit is this—"

She leaned over, dangled the free end of her chain over the surface of the artifact, then let the chain fall. As her gold ring touched the artifact—

Katerina smiled triumphantly. "See? Nothing happened. If there were high voltage present, we should have seen at least a big spark when the two metals touched. If the voltage were great enough it might even melt the gold. Now we know it's reasonably safe to step on this platform."

Martin leaned cautiously forward, studying the ring and the section of the chain lying inertly on the artifact's surface. "Maybe—but I'm still not convinced it's safe enough to try. There may be parts of this thing that are electrified or dangerous in some other way. I want to find out what this is all about as much as you do, but I don't want either of us to get hurt or killed trying. The only reasonable thing to do is to go back to the module and check with Mission Control."

As he was talking Katerina knelt down again. She swiped at the part of her chain dangling in midair between the cross and the alien platform with her hand, whipping the free end of the chain off it and onto the ground. Then she pulled the cross from the ground and reverently cleaned the dirt from its end with her fingers.

After putting the ring back on and readjusting her chain until it and the relic hung from her neck again, Katerina said, "By the way, Martin, perhaps you didn't notice that for an instant I was part of the circuit too when my fingers touched the chain. I didn't feel a shock."

"You—that was stupid! You could have been killed!"

Katerina's face darkened. "Maybe it was stupid. Maybe I could have been killed. And you're right, the safest and most reasonable thing to do would be to leave here and do what you said.

"But sometimes thinking and analyzing aren't enough. Occasionally you have to go beyond reason alone and do what you *feel* is right. Perhaps once in a lifetime, when the stakes are as high as they are now, you have to put your very life on the line and rely on faith. You're a good man, Martin, and I love you. If something bad happens to me, and you want to know why, when you return to the module read those books I brought with me. Especially the one by Kierkegaard."

"Who? Oh, you mean—*don't!*"

Before he could stop her, Katerina made the sign of the cross, took one small step toward the alien platform—and made a giant leap onto its surface.

Martin made a choking sound, waiting in petrified helpless horror for the woman he loved to die in a shower of sparks, contorting in agony as electricity clamped and seared her entire body. His brain and training screamed at him to stay back from the platform and not become a second victim, but they weren't fast enough to keep him from jumping beside her—

Katerina turned around just in time to dodge his hurtling form. As he lunged for her again she barely sidestepped his flailing arms.

"Martin, stop that! You're going to fall and hurt yourself!"

Martin glared at her, ready to yell, "That was the stupidest thing I've ever seen anyone do!" But then, glancing

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down at his own boots on the platform, he realized he was just as stupid as her—and just as alive. Observing the look of relief Katerina barely concealed on her face, he also saw that her faith wasn't blind at all. And it was very courageous.

Katerina sidled closer to him. "May I have my video camera back? I'd like to record as much of the surface of this object as I can."

Martin handed the video camera to her, then peered uneasily down at his feet. Here, with them both standing about five meters from the edge of the platform, he could see more of the strange squares. Most seemed, like the ones they'd examined before, to contain cryptic writing in no known language.

But other squares were uniquely alien. One held a hypnotizing swirl of colors that seemed to swell like a tide from the warmth of the infrared through the visible spectrum to the ultraviolet, then recede back again in a kaleidoscope of garish hues. Another was pitch black—like a hole into nothingness. That one he avoided approaching too close, in case it really was a one-way trip into the abyss. A third square rumbled menacingly when he stepped on it, becoming quiescent again as he quickly twisted his leg back onto firmer territory.

Slowly, carefully, they treaded toward the center of the metal platform. Martin glanced back to see the dust and mud from their footprints eddy up from its surface. That dirt shot across and off the edge of the artifact as if blown by a strong wind—except there wasn't any wind. He hoped this alien object they were walking on was smart enough to realize that Katerina and he weren't merely large pieces of flotsam.

Katerina wandered a little ahead of Martin as he stopped to test a blank, mauve-colored square with his transceiver. The square was transmitting an amplitude modulated signal at 700 kHz. It almost sounded like someone was speaking words in a foreign language—

"Martin, come here!"

Clipping the transceiver to his belt, he ran to Katerina's side and followed her finger pointing toward a square at her feet. She exclaimed, "Those look like Chinese characters!"

Katerina pointed again. "And the letters in that square are definitely Greek!"

She turned her video camera back on and aimed it down at the squares. "How many languages do you know besides English?"

"You know how bad my Russian is. Otherwise, I took two years of Spanish in high school and read a book called *French for Morons* once."

Katerina walked slowly away from him, eyes and camera fixed downward. "I'm fluent in both those languages as well as German and Dutch. I can also at least read a number of Slavic languages."

She stopped. "This square has Arabic characters! I bet if we look long enough we'll find squares with every major language on Earth!"

Martin frowned. "But if you're right, this whole artifact might be the equivalent of—"

"The Rosetta Stone? Exactly! Every square must hold the same message in a different language, so whoever came here would be able to read it no matter what their native tongue!"

"Sounds plausible. But how do you explain all those weird squares we've found? The ones with all the funny squiggles, smells, and sounds?"

Katerina walked slowly ahead of him. "I can think of an explanation, but that would mean—"

She stopped suddenly, her eye pressed to the video camera's viewfinder as its lens stared long and hard at the square at her feet. When she didn't say anything for a while, Martin trotted to her side, saw the letters within the square—and recognized them.

Before he could speak, Martin jerked as a single chilling word from Katerina roared in his ears.

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"RUN!"

Martin bounded up the ramp of the habitation module and swung his head wildly from side to side, looking for Katerina. He screamed her name again as he threw himself through the nearest compartments of the module, barely daring to breathe for fear he might catch the nauseating aroma of burning flesh. *Please, God, let her be safe—*

He found her sitting in the communications compartment, rapidly attaching a cable between the video camera and a monitor. His explosive sigh of relief quickly turned to puzzled anger. "What are you doing?"

Katerina finished plugging the silver cable into the monitor and turned on the video camera. Flashing images of the squares on the platform they'd just fled raced in reverse across the monitor screen until she hit the "Pause" button. She yelled, "Don't ask questions! Check to see if anyone or anything, like a spaceship, is approaching us!"

The frantic expression on her face matched his own—and what she said made sense. Martin dropped into the compartment's other chair and activated the radar and optical surveillance system. His hands raced over the controls, searching in the late afternoon sunlight for any movement in the sky or on the ground near the habitation module. Then he switched to the radar and camera aboard the Scout orbiter overhead.

He shouted, "No sign of anything nearby!"

"Thank God! Maybe it's not too late!"

Katerina tore her gaze from the monitor and adjusted their rack-mounted main transceiver. With a tense voice she slowly spoke a few sentences in Russian into a microphone. Then she pressed several switches and swiveled around to face Martin.

She sighed, "There. I've set it to transmit the message I just recorded continuously. Now all we can do is wait for a response."

Martin yelled, "What do you mean, 'wait'? You've sent the distress signal, now we've got to run to the ascent vehicle and blast back into orbit before it's too late!"

"What are you talking about? I'm not sending a distress signal. I'm transmitting a message to the aliens."

Martin's jaw dropped. "Are you out of your mind? Do you *want* them to find out we're here and kill us?"

"Kill us?"

Katerina pointed at the still frame on the monitor screen. It showed a close-up of the square with Cyrillic characters within it. "I know your Russian isn't very good, but I thought you'd eventually be able to read what this says."

"I couldn't make out any of it! But right after you ran away I found the square written in English! It must contain the same message as yours!"

"I'm sure it did. But why do you think—wait, did you read the entire message?"

"I read enough of it to know why you ran away—and that you were in danger!"

Katerina glared at him. "You thought I was afraid—"

Her face softened. "And you thought I was in danger and were coming to rescue me. I don't know whether to slap you or kiss you!"

Katerina leaned forward and brushed her lips against her fiancée's bristly cheek. "If you'd read the whole message, you'd know why I ran away. And you'd know that *we* aren't in danger—but the human race is!"

She glanced at the empty radar screen beside him and then settled back into her chair. "When I read the message I knew every second counted. There was no time to argue with you about what it meant. I knew you'd follow me back—and you did, even if it was for the wrong reason. And while I was running back here I thought about everything the aliens have done and why they've been so mysterious.

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"These aliens aren't just experts at planetary engineering. They're masters of human psychology. If they'd simply landed on Earth and shown themselves, everyone's focus would have been on them and not on what they were doing to Mars."

Katerina's eyes darkened. "Instead, the aliens were devilishly clever. What they did motivated us to go to Mars far more effectively than any speech. They stayed in the background and put on a show for us. All the incredible things they've done to this planet were designed to make us watch Mars and think about Mars. They aroused our curiosity and made enough people finally realize how important Mars is as a second chance for humanity. By living here, we increase the odds of the human race surviving despite all the foolish things we've done to ourselves and to Earth. Without Mars, we may have no future.

"The aliens dangled those hopes and dreams in front of us without saying a word. They showed us just enough to let our imaginations fill in the blanks without having to tell us anything. Now that they've manipulated us to come here in person, they're increasing the pressure on us to want to stay here. They want us to feel so excited about living here, make us so afraid we'll lose the planet, that we'll do anything and pay any price to *possess* Mars!"

Martin shouted, "That doesn't make any sense! Why would these aliens lure us here, build up our hopes of colonizing Mars—and then threaten to destroy us?

"Martin, what did the message in your square say?"

"It was at the top of the square, all in big blue letters. 'This world is the property of Interstellar Development, Inc. Unauthorized use of this planet is forbidden. Trespassers will be disintegrated.'"

Katerina shook her head. "Oh, these aliens are fiendishly subtle. They even shaded the messages for each of us."

She gestured to the Russian words on the monitor. "My square reads, 'This world is under the jurisdiction of the State Committee on Planetary Construction Policy. Authorized personnel only. Trespassers will be shot.'"

"Disintegrated, shot, what's the difference? Either way we're just as dead!"

"Oh, Martin, if you'd only read the rest of the message, you would have saved yourself so much unnecessary worry! It's the part that said *we* aren't in danger!"

Katerina brought her fingertip close to the monitor screen. "I put the recording on the monitor to make sure I remembered what it said correctly. Roughly translated, the words at the bottom of this square say, 'Open planet—today only. If you like what you see, call us on 1420 MHz for more information on how this world can be yours.' The message I'm transmitting is asking for that information."

"I don't get it. Are you saying 'open planet' means we're temporarily invited to be here? And if they really want to talk with us, why did the aliens put that message to contact them on just some of the squares? I can understand them doing ones in Chinese or Arabic if they didn't know what languages we spoke. But why did they make all those weird squares with the psychedelic lights and funny smells and sounds?"

Katerina's face darkened. "I think I know—and it explains why the gravity, atmosphere, and average temperatures here were modified to be similar to but *not* the same as we have on Earth. Those strange squares could even be just a trick to put more pressure on us. But if they are a real threat, the future of the human race is at stake!

"I believe *all* the squares on that artifact contain the same message. Some of them are meant to be read by human beings, but others are in languages spoken or sensed by creatures who *aren't* from Earth. The environment that Mars has now must be close enough to their own

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worlds' to be as comfortable for them as it is for us."

She sighed in frustration at the blank look on her crewmate's face. "Don't you see, Martin? That artifact is a gigantic 'For Sale' sign! We humans may be first in line because we live in the neighborhood, but the aliens who renovated Mars are advertising it to potential customers from *other* worlds too! That's why it's important we get our bid in and close the sale as soon as possible—before some *thing* else buys Mars!"

Martin stared at her. Finally he said, "What you're saying almost makes sense. But if you're right, we still have a major problem. The aliens who made your 'sign' are incredibly powerful and scientifically advanced. They can move and reshape entire worlds. What could we puny, primitive humans have that they might take as payment for an entire planet?"

"I don't know, and that worries me. Let's just hope you and I can negotiate a price that's acceptable to them and to our leaders back home."

"I have a better idea. I still think we're in danger, but I'm willing to take time to contact Mission Control and get an official decision on whether we should stay or leave. In return, I want you to promise me that if there's any sign of trouble, we should both get out of here as fast as—"

Martin stopped talking. There was a faint rhythmic thudding noise outside. It sounded like heavy footsteps on the ramp leading into the open entrance of the habitation module.

He looked back at the radar screen and then checked the module's internal surveillance cameras. The thing from another world that his instruments said wasn't there crept closer and closer through the module with a steadily louder, ponderous gait. Now Martin could hear the low-pitched swoosh of breathing, as deep and dark as a great whale's call in the ocean depths, coming ever nearer.

Katerina clutched the cross suspended from her neck with her right hand and raised her left index finger to her lips. She whispered to him, "Be still." Martin studied the nervously calm expression on her face as she sat waiting. He tried his best to imitate it.

A hulking, oddly shaped shadow fell across the entrance to the communications compartment. As the shadow's creator slunk into sight Martin struggled furiously to make sense of the impossible image reflecting off his eyes. Then the monster from the Interstellar Development corporation spoke in the friendly tenor of a TV game show host.

It said, "Let's make a deal." ■

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The Sons of Heaven, Kage Baker, Tor, $25.95, 431 pp. (ISBN: 0-7653-1746-X).

Radio Freefall, Matthew Jarpe, Tor, $24.95, 316 pp. (ISBN: 0-7653-1784-2).

Spindrift, Allen Steele, Ace, $24.95, 354 pp. (ISBN: 978-0-441-01471-2).

Postsingular, Rudy Rucker, Tor, $25.95, 320 pp. (ISBN: 0-7653-1741-9).

Payback City, John Barnes, E-Junkie (http://tinyurl.com/3btn28), $4.00, 422 pp.

Beyond Human: Living with Robots and Cyborgs, Gregory Benford and Elisabeth Malartre, Forge (Tor), $24.95, 261 pp. (ISBN: 0-7653-1082-1).

Night Smoke: Bruce Boston, ill. Marge Simon, Kelp Queen Press (kelpqueenpress.com), $18.00, 68 pp. (ISBN: 978-0-9689934-6-0).

A Thousand Deaths, George Alec Effinger, Golden Gryphon Press, $24.95, 340 pp. (ISBN: 978-1-930846-47-9).

When we last met Alec Checkerfield (in *The Machine's Child*, reviewed here in January/February 2007), he was sharing his brain with the mind-records of his predecessor clones, Victorian Edward and Elizabethan Nicholas, his beloved Botanist Mendoza was more than a bit confused at the constant shifting of voices and personalities, and the immortal cyborg troops of the Company (a.k.a. Dr. Zeus), once dedicated to rescuing the treasures of the past before their destruction by fire, flood, eruption, and war (etc.) for the delectation and enrichment of the future, were plotting rebellion against their masters, who had shown a distressing tendency to put unwanted servants in cold storage or even subject them to endless, agonizing (and ultimately fruitless) efforts to destroy them. And the year 2355, when all the Company's records of the future fall silent, was fast approaching.

The Sons of Heaven completes the series. The Company still wants to destroy its staff and has engaged the services of a strange and vindictive folk who remind the reader of faerie (they live under the hill, they have a queen, they're small) to find a poison that will do the job. They seem to have succeeded, or at least the test subject, cyborg Lewis, has been tossed into the bone pile. Yet Lewis isn't quite dead, and when the queen's young successor stumbles upon him, he responds to care enough to start talking, telling stories, asking for nutrients to aid his further recovery, and desperately craving to send word of the poison. Meanwhile the cyborgs have multiple factions, all scheming to overcome the Company in 2355 and make the future theirs. At least one faction thinks the world would be better off without people in it.

And Alec's body is now dominated by Edward alone. Mendoza is pregnant with twins, clones, ready to be infused with the recorded minds of Alec and Nicholas. Alec's—now Edward's—piratical AI, Captain Morgan, has used the time-ship to find an idyllic island outside of time where the kids can be raised,

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and if the island sounds a bit heavenly, well, Baker has to justify the title somehow.

What happens in 2355? Things come to a head, of course, but you don't need me to tell you that. Baker has a great many balls in the air, and she has displayed so much skill as this series has developed that you just know she will manage to set them all down on the table without dropping a one. On the way, she does a few tricks that strained my credulity a bit but never broke it. Her reputation is intact at the end, and even enhanced. The Company series seems bound to enter the records as a classic. Certainly it will be hard to top, though Tor assures us that Baker is not done.

Don't miss it.

Matthew Jarpe's first novel, **Radio Freefall**, is interesting but has serious difficulty in convincing the reader to suspend disbelief long enough to enjoy the story. The basic problem is the villain, Walter Cheeseman, who has a plot to unify and rule the world by convincing governments to give his private company, WebCense, more and more government functions, to the point where there is nothing left for government. Cheeseman isn't there yet, but he already controls all news and entertainment and he's working on it; if all goes well . . . My own thought is that he'll get what he wants when pigs fly.

But never mind. The tale opens at a concert where mystery guitarist and singer Aqualung, with the Snake Vendors band, is exercising a gizmo that picks up and feeds back audience response to give the audience exactly the high old time they crave. Meanwhile Quin Taber is demonstrating a special computer, the "isolate," that is proof against the Digital Carnivore, a life form evolved from an ancient virus. Taber was fired from WebCense when he tried to convince Cheeseman the beast was real. Now Cheeseman is trying to use the discovery to firm up WebCense control of the Net but not getting anywhere. But Taber is tracking the Digital Carnivore's origins to ancient hackers and the rock band Animal Bones and discovering that its secrets appear to be locked with passwords drawn from a never-produced album.

Aqualung and his group get famous (feedback works!). Soon his true identity comes out: he is Adrian Rifkin, once of the Animal Bones. Cheeseman gets wind of this and sends out the squad to cut off his head, freeze it, and bring it in so its memories can be scanned. An old foe reactivates an unfulfilled contract on him. He escapes just in time, though, and soon winds up on the space station Freefall (which looks rather like the Stanley Cup) on his way to the Moon, which is resisting WebCense's efforts to establish control. WebCense cuts off traffic to the Moon, trapping Rifkin, and soon it is clear that WebCense is going to send troops to destroy Freefall and kill or reprogram everyone aboard. Cheeseman is already telling the world, through the media he controls, that Freefall is in the throes of rebellion and systems failure. He's sending rescuers, not troops. He *really* wants Rifkin's secrets!

But it's rock and roll, kids. Great verve and momentum. Some sex, lots of drugs, and fond memories of cyberpunk (lots of plugging in going on) and Heinlein (independence in space). It would have been an intoxicating mix twenty years ago; today it's a bit quaint and unlikely and played too straight to be meant as satire. If Jarpe can apply his talent for verve and momentum to more likely stories, he's going to be a writer to watch for.

Allen Steele continues his stellar Coyote series with **Spindrift**, which answers a question raised in *Coyote Frontier*: When Earth brought its new starbridge technology to Coyote, it also brought word that the first starbridge-using ship, the *EASS Galileo*, had vanished. Now we learn what happened, for the three

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survivors of the *Galileo*, along with an alien emissary, showed up at Coyote in the *Galileo*'s shuttle, and now they have come to Earth with complete reports.

Those survivors are the *Galileo*'s first officer, Ted Harker, who should have been captain but for the connections that gave an incompetent scion of nobility the plum; Emily Collins, the shuttle pilot; and astrobiologist Jared Ramirez, once complicit in the savant (uploaded minds) plot to wipe out a large portion of humanity to ease the population crisis, then sentenced to a life of hard time, and released because his expertise was needed on the *Galileo*. Why? Telescopes had picked up a mysterious huge object, perhaps a starship, traveling past Sol a couple of light years out. The *Galileo*'s mission was to investigate, and Ramirez was the closest thing Earth had to an expert on alien life. Unfortunately, he has a reputation as a genocidal mass murderer. It takes a while for anyone to warm up to him, but when he learns that the captain is prepared to take "emergency measures" if necessary, and Emily spots a missile strapped onto their ship at the last moment, he becomes part of a trio.

Steele has always enjoyed taking potshots at official stupidity, so now we have some notion of why the *Galileo* vanishes. The big remaining question is why Ted, Emily, and Jared survive. But in due time . . . The object—Spindrift—proves to look a lot like an asteroid, except with some odd features such as a huge hole that just might be an engine nozzle, and a few warm spots covered with carbon dioxide snow. Not to mention a starbridge in orbit around it. While our trio descends to the surface to explore, finding a port and descending weird staircases to find control rooms and caverns, the *Galileo* moves to investigate the starbridge. Alas, when an alien ship emerges from it, the captain decides it's an emergency.

So. Three survivors with no way home. With little hope, they go into stasis, only to wake up some fifty light years away in the hands of the aliens. Who are they? What do they want? I have to leave something for the reader to learn on his/her own, so I won't reveal any more, although since we already know an emissary comes to Earth, the mystery is a bit constrained.

If you're a Steele fan, this one will delight you. It's a fine tale in its own right, and it is a harbinger of future volumes, which must move humanity out among the aliens. Steele being fond of official stupidity, you can be sure Earth's governments and other authorities will find ways of trying to mess things up, but Steele also likes to say that people of good will exist and can haul chestnuts out of fires.

If you're not a Steele fan, read *Spindrift*, hunt down the other Coyote titles, and become one.

We've been hearing a lot about nanotechnology for years. The ultimate dream is teeny-tiny self-reproducing robots that can disassemble and assemble things atom by atom. A variant is smart dust, which can be as simple as networked sensors to sprinkle on a battlefield so they can report weather, troop movements, and so on, or something a bit more complex. For instance, if they were equipped with little arms so they could glom onto each other, they might provide a way to materialize objects out of smart dust floating in the air. Equipped with a bit of computing power *and* given the ability to reproduce themselves, they could bathe us in a networked intelligence or intelligences.

Trust Rudy Rucker to give this all some bizarre twists in **Postsingular**. Jeff Luty is a geek scarred by his past. He wants to revise reality so nasty accidents can't happen, and his method of choice is nanotech disassemblers (nants—and who but Rucker would name the nant box a "nant farm"?) that can record every detail as they disassemble the world so it can be run as a virtual simu-

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lation. The test run is on Mars. Fortunately for the world, Luty has an employee, Ond Lutter, who figures out how to take advantage of reversible computation with an abort code that will make the nants put everything back the way it was. Unfortunately, Luty doesn't like the idea, fires Ond, and unleashes the nants on Earth. Ond uses the abort code and saves the world, but that's only the beginning.

Ond's marriage is in trouble. His wife leaves. He's stuck with his autistic son, Chu. A friend who catches squid for a living finds squid disappearing from their tank. Ond comes up with orphids, smart dust that eats nants (they're nanteaters, of course) and also provides networked AIs (beezies) to supplement intelligence. It's not supposed to eat and simulate the world. And as soon as it's released, it settles on everything around, tagging, linking, revealing even the invisible giants from the Hibrane, the universe next door, who don't like nants or computers or, indeed, technology. They also don't want us Lobraners to drop in on them. When Chu figures out how to visit the Hibrane, they capture him and Ond and erase the technique's description from everywhere it was stored in the Lobrane.

Now the tale must be carried forward by a group of "kiqqies," the Big Pig Posse, who use the orphid-net beezies to find food and shelter but otherwise look pretty homeless. It's up to them to get Chu and Ond back, queer Luty's continuing efforts to eat the world, and find a way to match the Hibrane's safer version of omnipresent intelligence and memory enhancement.

Any true singularity pretty much by definition has to be so over-the-top that it would stun present-day minds. This is over-the-top as only Rudy Rucker can do it and therefore a worthy stab at portraying the cognitive impact of a singularity.

Way back in 1997, John Barnes wrote **Payback City** for a British publisher that promptly trimmed its list and blew him off. When he tried to sell the book elsewhere, no one wanted it. And when September 11 happened, the book became absolutely unsalable.

It's a damned shame, too, for though the book has flaws, it's the book's strengths that are the problem. Barnes—in 1997—predicted an Islamic fundamentalist attack on an American city. The method he describes is not that of 9/11, nor are the reasons exactly the same, but the roots are there in a powerful anger toward the US, fed by opportunists who want to make money or gain power. Indeed, a political staffer who is suspected of treasonous activity at one point talks about the need for a New Order that would amount to a global version of Homeland Security. At this point I started wanting to call Barnes a prophet. His later comments on how various intelligence agencies failed to talk to each other, put the pieces together, and prevent disaster reinforced the feeling.

Another strength is that Barnes is very good with his characters, including the leader of the attack team, who really likes living in America and wishes he didn't have to do what he's planning, but he has loyalties and anger and America has it coming. This empathy is part of what makes *Payback City* a "liberal" thriller, for which Barnes says there is only a small market. Most thriller readers want conservative messages, including villains with many fewer redeeming qualities.

But it's definitely a thriller. The scene is Detroit, where arson investigator Kit Miles is a busy fellow. His sister LaTonya is an FBI agent in Washington, currently undercover in the office of a Republican congressman from the Detroit suburbs; she is looking for evidence that his head of staff, Barry Martin, is committing treason. Adhem is the captain of a small advance team from the Maghrebi (western North Africa) Republic. He has a girlfriend and life is sweet, but *der tag* is

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only nine days away and someone has stolen three crates containing 450 superfirebombs from a cache (fortunately there are more caches and more—and more powerful—gear). Kit runs into the results when the bombs start getting used. Meanwhile LaTonya is getting suspicious of a bill that will admit to the U.S. one hundred Maghrebi engineers (with military backgrounds) to work for a Detroit company. A little investigation reveals that Martin's phone traffic touches bases in Japan and the Maghrebi Republic.

The pattern comes together with deadly inevitability. The firebombs are replaced. The arson team learns only that they exist and gets hints that they may be a part of something much larger. Someone mentions the value of using an advance team and prepositioning armaments for a military attack. That bill goes through, and despite suspicions LaTonya and her FBI boss cannot stop the president from signing it. Nor can they interfere with the arrival of the Maghrebis, for they are prepositioned across the border in Canada, and as soon as the bill is signed, they cross. And then . . .

It's payback time, and you know what payback is. Detroit should be happy this is only a novel.

So should you, for though it remains unpublished (and perhaps unpublishable) by any major house, Barnes has made it available for a very modest price. He includes a lengthy essay on the background of the novel, the political science behind his analysis (and he has a poly sci degree), things he was right about, things he was wrong about, and the difficulties of publishing a "liberal" thriller. He does not spend much time on the perennial "timeliness" problem of thriller writing, but he could. Thrillers thrive on connections to topical issues and current fears and obsessions. When those change, a thriller can become obsolete overnight, and I have had occasion in the past to remark on those unfortunate writers whose books became obsolete shortly before they were published. Yet even though *Payback City* became obsolete in terms of current events on 9/11, it did not in terms of underlying issues. Maybe he should just relabel it alternate history!

Go get it. It's four bucks you won't regret spending.

Gregory Benford's visions of the future have long been peopled with human characters with mechanical/electronic add-ons and machine characters (mechs) with biological add-ons. Such things are accepted by SF readers with few qualms. We've been hearing of robots and cyborgs for a long time! The general public, however, knows them from TV and film, where a good part of the time they are monsters. Yet they are coming. Robots are already moving into our homes, and not just as toys (think of the Roomba vacuum cleaner). We already have cochlear implants for the hard of hearing, and researchers are working on electronic implants to improve the lives of quadriplegics and the blind. Memory and sensory enhancements for the rest of us seem just over the horizon.

How far will it go? Can a human being be so modified that he or she is no longer considered human? Maybe not as long as we're talking about implants, but what about mental uploading into a machine? If when I get old and decrepit I have my mind copied into a truck's computerized control system, am I still Tom Easton? Can I still vote? Do I still have a "soul" (whatever that is)? How much does the shape—or existence—of my body matter? Such questions are being seriously considered by researchers today; in fact, MIT's AI Lab has a theologian on staff!

As for robots, they're getting smarter, and perhaps one day we will have to recognize them as persons that, just like meat humans, deserve rights, legal standing, and protection from slavery and other forms of abuse. They won't be

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"just machines" anymore! Will they be "human"? What does "human" mean, anyway?

If these issues intrigue you, get **Beyond Human: Living with Robots and Cyborgs**. Gregory Benford and the pseudonymous Elisabeth Malartre are by no means the first to address them, and as they note, the book was finished in 2005, so it does not consider the latest developments (some of which fit neatly into their discussion). The approach is non-technical and thus well suited to general readers. At the same time, they cite examples galore from SF to illustrate their points, which should make the book of extra interest to readers with SF backgrounds.

Bruce Boston just sent along his latest little book of poems, **Night Smoke**. He's still among the premier poets of science fiction and fantasy, his work rich with genre tropes and images and Boston's own unique visions. The title piece concerns men and women, relationships and sex. Fire burns up face, body, heart, desire, with a culminating horror of revival, passion, and ash. And yes, he's a little less cryptic!

If you like poetry, order a copy. It's a limited edition of 300, though, so good luck.

The late George Alec Effinger was a seminal figure in SF, much appreciated by many readers, among whom must be counted Mike Resnick, who has already plugged a number of Effinger's stories into his own anthologies and here pens the introduction to editor Marty Halpern's work. **A Thousand Deaths** collects a number of the Sandor Courane stories, often autobiographical in important ways, for Courane, like Effinger himself, must face death in many ways. Here you will find the famous *The Wolves of Memory*, in which social misfit Courane is exiled to a planet that devours memory and must confront the machine, TECT, that rules humanity. In other tales Courane is an SF writer or editor, and the stories themselves, in Mike's words, are "the most creative, the most off-the-wall stories that George or just about anyone else ever put to paper."

People who write introductions can be forgiven for waxing a bit hyperbolic. That's what they're supposed to do, after all! You'll enjoy finding out whether Mike needs forgiveness. ■

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BRASS TACKS

Dear Stan,

I'm a French *Analog* subscriber since 1992. So far, I've never written to you, but there must be a first.

Let's just say that generally speaking, I enjoy reading *Analog*, your insightful editorials (first thing I read), interesting science facts, and of course, the stories you publish.

Of course, I have my tastes: some stories I love, some I like, some leave me indifferent, and sometimes I even dislike a story (rarely so). I particularly enjoy writers such as Flynn (I have found memories of "Melodies of the Heart"), Nordley (from "Poles Apart" to the BHP series), Rollins, Oltion, Vajra, Niven, and Lovett.

For the first time ever, I found an *Analog* story I positively hate (generally, I'm a peaceful, open-minded and tolerant guy).

It's "Trial by Fire" by Shane Tourtellotte, in the April '07 issue (from his "overlay" series). It could have been a good story about the development of a new and dangerous scientific technology, and the ethical problems scientists are confronted with. But a single phrase ruined the story for me. It's when the NSA agent, after the nuclear bombing of Washington, says that the terrorists must have had aid from a nuke power and that it could be "any nuke power, except us and Britain, maybe Japan." The author seems to imply that France (among others) could have helped terrorists nuke Washington. There, I couldn't suspend my disbelief . . . and my wrath. I can understand that some Americans, these last years, don't like France and its politics (I have reservations too about France's attitude towards the USA these last years). But to write such hateful crap (even by stealth implication) and to publish it in *Analog* . . . (and it doesn't add anything to the plot, it's just gratuitous). I think it stinks . . . not up to *Analog* standards.

I just wanted to let you know about my feelings.

Nonetheless, long life to *Analog*.

Fabrice Doublet

The author responds . . .

Dear M. Doublet,

I had hoped "Trial by Fire" would have a powerful impact on readers, but yours was not the reaction I had hoped for. Let me make two brief statements on my own behalf.

First, to paraphrase Stan, opinions of characters in a story are not necessarily the opinions of the story's author. Agent Hope's suspicions about who might attack America with nuclear weapons are his. So, in contrast, were Dr. LaPierre's theories that "anti-government extremists . . . even a treasonous military faction" could have perpetrated the attack. Honestly, I would have been as surprised to hear from insulted American soldiers as I was to hear from you.

Second, note that your nation was not remotely the only one that Agent Hope implied might be responsible. I'll give as an example India, a nation with a nuclear arsenal, and one that, if not an outright ally, Americans would generally consider friendly. A lot of Indians would be as upset as you at being considered

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imaginable suspects in such an attack. Indeed, many Japanese would be incensed to hear that "maybe" Japan wasn't inclined to nuke America. I could easily add other nations to the list. Hope's statement comes at a terribly frightening moment, and if he casts a wide net, it is because he knows the price for guessing wrong.

Fortunately, we can agree on one thing: long life to *Analog!*

Sincerely,
Shane Tourtellotte

Sir,

A note to correct an error made in the story, "Political Science," by C. W. Johnson, appearing in your July/August 2007 edition. In what appears to be a desire to blame everything bad on his object of great hatred, the protagonist blames Bush 41 for not funding the superconducting supercollider.

As I am sure you all know, the funding was cut off in 1993, during the Clinton administration, by a bipartisan vote of Congress. The funding had been in Bush's budget request.

I think the author let his hate lead him to error. A problem that confronts us all.

Thanks,
Harold Brashears

Or maybe he simple misremembered and didn't check—an oversight, perhaps, but hardly as sinister as you assume.

Stan (If I may be so familiar),

I know you'll have probably already been told, but the story "The Test" in your recent double edition bears a very strong resemblance to a much older story from, if I recall correctly, the '50s or thereabouts. Main difference then was that the alien protagonists took the form of a ghastly alien, an old prospector, and his mule. Can't remember the exact title, I'm afraid. Would be curious to know how many other readers spotted it—I'm beginning to realize that not everyone grew up on Clarke, Sturgeon, Van Vogt et al.

And congratulations on a truly excellent publication that I've been reading for a couple of decades now.

Regards,
Lee Reynolds

A couple of other readers did point out a general similarity of theme and plot between "The Test" and Fredric Brown's "Puppet Show," which appeared in Playboy *in 1962. I found a copy in a collection I hadn't read, and have to grant the casual resemblance; however, I strongly suspect that's mere coincidence, the idea being one of those that has probably occurred to many writers independently. You're right that not all newer writers have read (or remember) all of the older ones; the backlog of material has long been much too big for that. In any case, the treatments were substantially different. One reader said he preferred Brown's story but added that he usually prefers "the original." That's a common effect; I read Kirkland's version first and found that, if anything, Brown's seemed unnecessarily drawn out—which is a little surprising, because I'm a great fan of Brown's short-shorts.*

Dear Dr. Schmidt:

Dr. Roger Angel's proposal to create a sunshade at Earth's Lagrange Point 1 ("The Alternate View: Cooling Off Global Warming From Space," July/August) is a great idea that has a lot of potential to do more than save Earth from a climatic disaster. First, it needs a snappy name. How does Project Parasol sound to you?

Second, the deflector itself need not be complicated. At a range of 1,500,000 kilometers, the deflector need only shift the Sun's light a little over a quarter of a degree to make it miss Earth completely. We could use Fresnel lenses stamped into Mylar film. Further, the force that the Sun's light would exert on that film

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would equal the force that it would exert upon a perfectly black body multiplied by one minus the cosine of the deflection: using Dr. Cramer's figure for the pressure of sunlight, I calculate a force of 41.4 micronewtons per square kilometer of material. If we want to deflect 1.8% of the light striking Earth, we will need to use the equivalent of a circular Fresnel lens with a radius of 855 kilometers, about 2.3 million square kilometers, and it will have to resist an additional force of a little over 95 newtons.

And third, I would ditch the electromagnetic launchers. Project Parasol is the perfect incentive for the development and construction of a space elevator. Unlike Dr. Angel's high-gee launchers, the space elevator can carry relatively delicate cargoes, such as people, into space. Therein lies the beauty of the plan: just as President Eisenhower's network of military highways (a.k.a. The Interstate Highway System) stimulated growth in the American economy, so the space elevator will stimulate tremendous growth in the cislunar economy. Eventually a great fliederstadt will grow on Clarke's orbit and put Humanity into an excellent position from which to expand out into the Solar System. And all from a perfectly reasonable plan to protect Earth from excess warming.

Yeah, let's do it! All we need now is for someone to show that Project Parasol will cost less than the damage that global warming will do if we don't take steps to mitigate it. That's something I will have to leave to one of your other readers. May our collective wisdom make this dream come true!

Cordially,
Dennis Anthony
Los Angeles, CA ■

Freedom is not worth having if it does not connote freedom to err. It passes my comprehension how human beings, be they ever so experienced and able, can delight in depriving other human beings of that precious right.

—Mohandas Gandhi

People never lie so much as after a hunt, during a war, or before an election.

—Otto von Bismarck

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UPCOMING EVENTS Anthony Lewis

30 August–3 September 2007
NIPPON 2007 (65th World Science Fiction Convention) at Pacifico Yokohama, Yokohama, Japan. Guests of Honor: Sakyo Komatsu and David Brin; Artist Guests of Honor: Yoshitaka Amano and Michael Whelan; Fan Guest of Honor: Takumi Shibano. Registration: USD 220; JPY 26,000; GBP 125; EUR 186 until 30 June 2007; supporting membership USD 50; JPY 6,000; GBP 28; EUR 45. This is the SF universe's annual get-together. Professionals and readers from all over the world will be in attendance. Talks, panels, films, fancy dress competition—the works. Nominate and vote for the Hugos. This is only the third time Worldcon will be held in a non-English speaking country and the first time in Asia. Info: www.nippon2007.org; info@nippon2007.us. Nippon 2007/JASFIC, 4-20-5-604, Mure, Mitaka, Tokyo 181-0002. North American agent: Peggy Rae Sapienza, Nippon 2007, PO Box 314, Annapolis Junction, MD 20701, USA. UK agent: Mike Rennie, 68 Crichton Avenue, Burton Stone Lane, York, Great Britain YO30 6EE (sparks@lspace.org). European agent: Vincent Doherty, Koninginnegracht 75a, 2514A Den Haag, Netherlands (VJ1709@hotmail.com). Australian agent: Craig Macbride, Box 274, World Trade Centre, Victoria, 8005 Australia (nippon07@f8d.com).

7–9 September 2007
CopperCon 27 (Phoenix area SF conference) at Embassy Suites Phoenix North, Phoenix, AZ. Author Guest of Honor: Charlaine Harris; Artist Guest of Honor: Sean Martin; Music Guests of Honor: Heather & Allison Stern. Registration: $40 until 15 August; $45 at the door. Info: www.coppercon.org; cu27@coppercon.org; CopperCon 27, PO Box 62613, Phoenix, AZ 85082; (602) 973-2341.

21–23 September 2007
FOOLSCAP IX (Washington state SF conference) at Sheraton Bellevue, Bellevue, WA. Guest of Honor: Charles de Lint; Artist Guest of Honor: Charles Vess. Registration: $45 until 20 September; more at door. Info: www.foolscapcon.org; chair@foolscapcon.org.

21–23 September 2007
MOUNTAIN-CON III (Utah SF/media conference) at University Park Marriott, Salt Lake City, UT. A Celebration of Fandom. Guests of Honor: David Prowse, Garrett Wang, Barbara Luna, Felix Silla, Eric James Stone, Dan Willis, Paul Genesse, Robert J Defendi, Howard Tayler. Registration $40 in advance; $5 at the door. Info: www.MountainCon.org; info@mountaincon.org; Mountain-Con III c/o Carl Stark, 3872 West 2550 South, Ogden, UT, 84401-9007.

28–30 September 2007
CONTEXT 20 (SF reader/writer conference) at Midwest Hotel and Conference Center, Columbus, OH. Author Guest of Honor: Tim Powers; Editor Guest of Honor: Mike Resnick; Horror Guest: Michael Arnzen; Anime Guests: Matt Greenfield, Tiffany Grant; Special Guest: Walter Hunt; Musical Guest: Tom Smith. Registration: $35 until 15 August 2007; $45 thereafter; $50 at the door. Writers Workshops: check website for fees. Info: http://www.contextsf.org. ■

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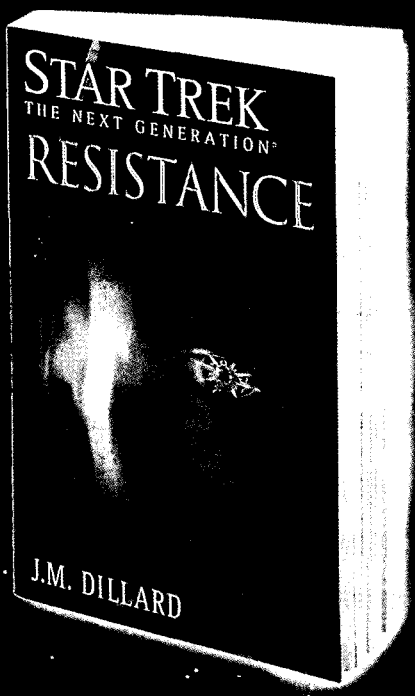

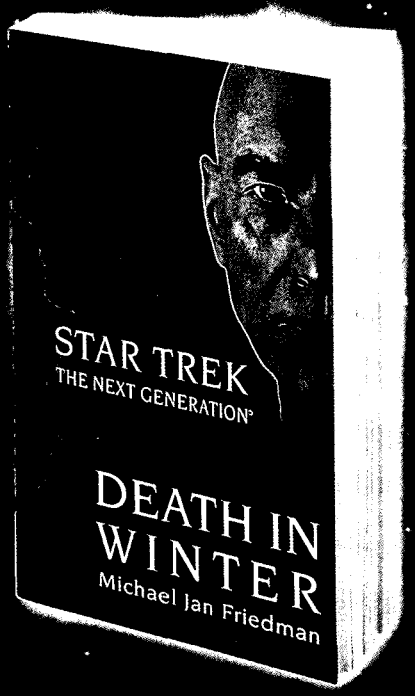

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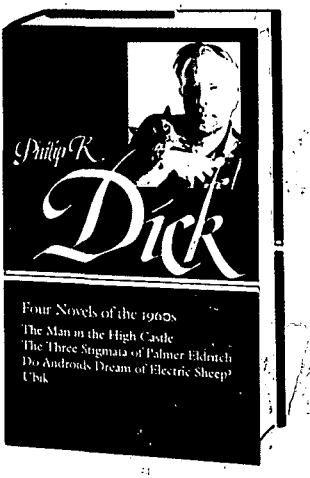

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